

The MINING CONGRESS JOURNAL



Volume 9

JUNE, 1923

Number 6



Industrial Cooperation Number

TAKING STEPS TOWARD PEACE IN INDUSTRY

By JAMES J. DAVIS
Secretary of Labor

Laying a Basis for Industrial Harmony

By LAWRENCE F. ABBOTT
President, The Outlook Company

The Foreman as a Factor in Management

By J. G. BRADLEY
President, Elk River Coal and Lumber Company

Injection of Spirit into a Mining Camp

By E. M. SAWYER
Phelps Dodge Corporation

—And many other equally important articles dealing
with relationships between employer and employee

JOHN W. SHEERS

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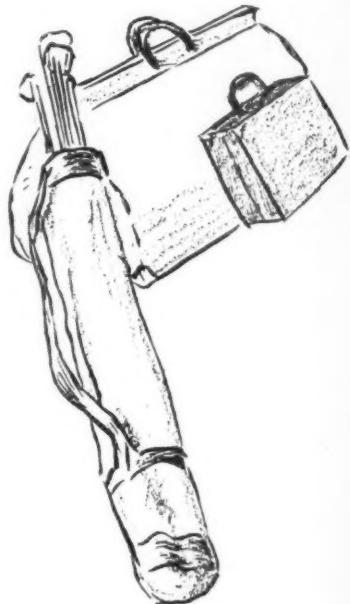
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In addition to the Convention is the Exposition of Mines and Mining Equipment and the Open Forum for discussion of all day to day problems of management.

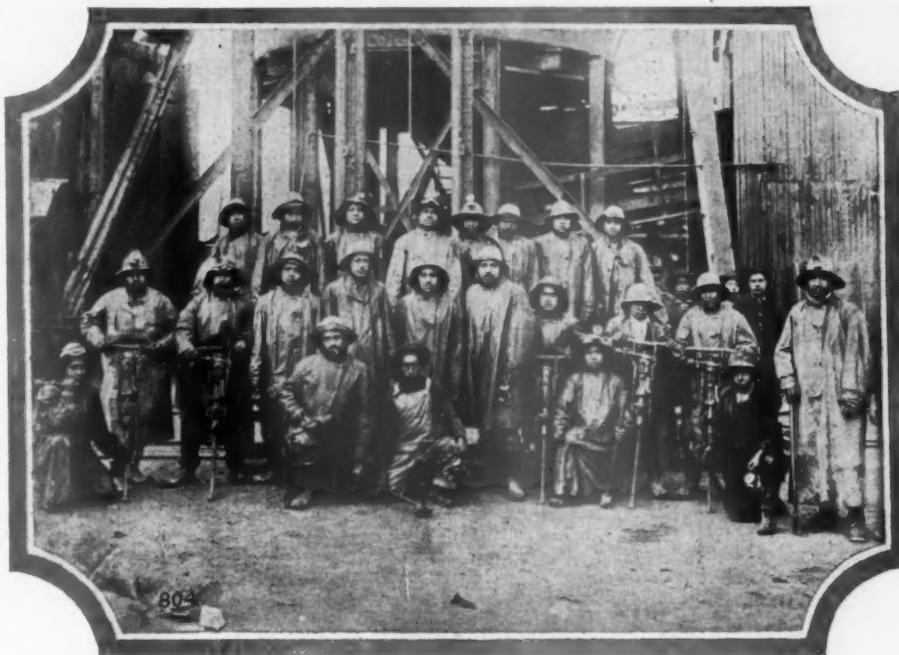
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JUNE, 1923

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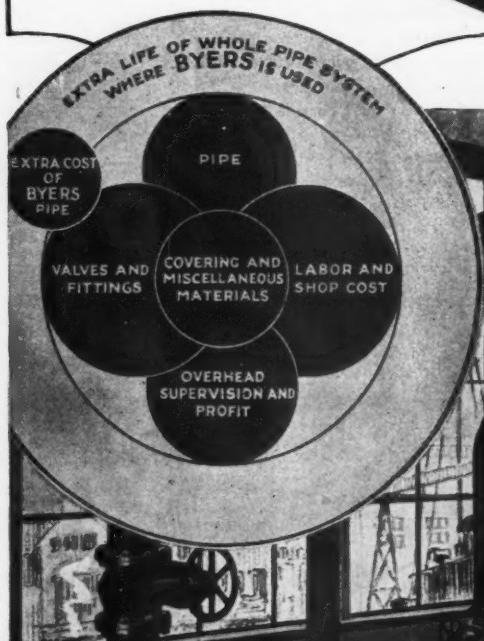
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Any pipe carrying hot water or condensate of steam

is subject to severe corrosive attack. It therefore pays you to specify and install Byers pipe for steam drips, drains and return lines as well as for blow-offs, soot blower piping and hot water supply or circulating lines.

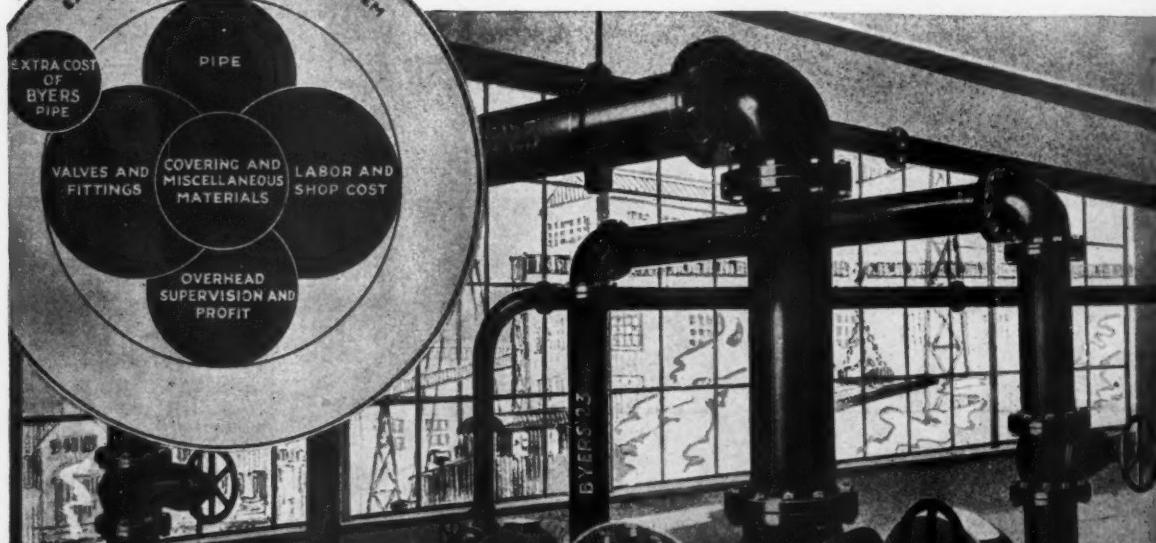
The economy amounts to more than the mere saving of the pipe itself, for failures spell loss of production, idle time of workers, and replacement expense which amounts to many times the bare pipe cost.

Byers Bulletin No. 38 "The Installation Cost of Pipe"
contains cost analyses of various pipe systems, with notes
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Dorman (patented) Expansible and Flexible Joints and Piping.

Vislok the Reliable and ONLY Safety TRIPLE Lock in the World.

Will be practically demonstrated at the following LONDON Exhibitions:—

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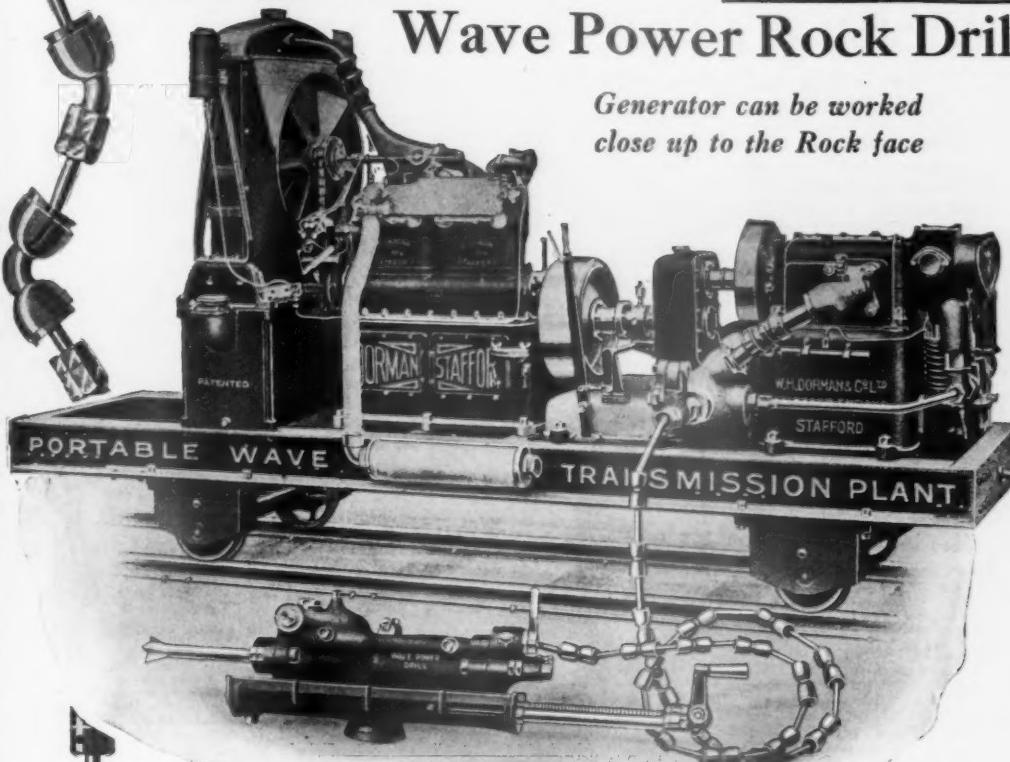
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Saves over 50% in *Power Costs* and *Time* compared with Air Power

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*Generator can be worked
close up to the Rock face*



36 hp. R.A.C. Petrol Engine Wave Power Plant working THREE Drills simultaneously or separately at 2,400 blows per minute or at any frequency required.

INDEPENDENT and AUTOMATICALLY SYNCHRONISED ROTATION of the DRILL STEELS on the return stroke of hammer. No Splines used. Any Drill Steel used from 1-in. to

4-in. bits with one chuck only. The high frequency makes for ease in collaring holes as Wave Power impulses arrive continuously at all lengths of stroke from zero.

The running Water conveying the Power converts all the rock debris into liquid sludge. Controlled by Drill Operator. Keeps Drill Cool. The bit always works on the virgin rock face.

DUSTLESS Drilling without Increased Equipment or Power Costs.

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Worn Hammers replaced at small cost without the necessity of the scrapping or regrinding of the Wave Rock Drill Body which continues workable. This is a distinct saving in maintenance cost compared with Compressed Air practice.

Saves over 50% in Power Costs and Time compared with Air Power

DORMAN Self-Contained DUSTLESS Wave Power Rock Drill

Generator can be worked close up to Rock Face

The running Water conveying the Power converts all the debris into liquid sludge. Controlled by Drill Operator. Keeps Drill Cool. The bit always operates on the virgin rock face. INDEPENDENT and Automatically synchronised Rotation of the Drill Steels on the return stroke of the Hammer. No Splines used. Any Drill Steel used from 1-in. to 4-in. bits with one chuck only. The high frequency makes for ease in collaring holes as Wave Power impulses arrive continuously at all lengths of stroke from zero.

DUSTLESS Drilling without Increased Equipment or Power Costs

Works Three Drills Simultaneously or Separately

A Three Drill Self-contained Wave Power Plant is permanently fixed on a Steel Frame Trolley to run on a 2 ft. 6 in. gauge railway, and consists of a 4 cylinder Dorman Petrol Engine, 36 R.A.C. rating, coupled to a Wave Generator (Patented) through an ordinary gear-box and clutch. Can be designed for Engine, under its own power, to move the complete unit any distance. Rails not necessary.

THREE Cradle mounted Dustless Rock Drills, can be worked simultaneously or intermittently, each on a separate Pipe Line at a length of One Hundred and Thirty feet each drill, or

Two Cradle mounted Dustless Rock Drills can be worked simultaneously or intermittently, each on a separate Pipe line at a length of Two Hundred and Fifty feet each drill, or

One Cradle mounted Dustless Rock Drill can be worked at a pipe-line length of Five Hundred feet.

Several separate pipe lines of 500 ft. each can be in economic use serving in rotation the several districts of the Quarry. One Drill continuously at work while the other rock faces are being cleared. The Power Input through Generator, instantaneously and automatically adjusts itself to the varying working load to correspond with the number of Dustless Rock Drills being operated at any one time. Immediately one or more drills are shut off or temporarily stopped, the Power Input automatically reduces itself to the minimum power demanded. There is no heavy idle load.

The "Dorman" Engine is a standard design with all working parts standardized and interchangeable and giving ample reserve power. If necessary can be adapted to run on Paraffin. The Oil Lubricator of Engine and Wave Generator is automatic. The complete Generator Plant can be left unattended

Regular working Drilling speeds in hardest Cornish Granite as follows. In quarries, other than granite, these speeds are exceeded.

Diameter of Bit.	Rate of Penetration.
4 in.....	2 ins. per minute
3½ in.....	3 ins. per minute
3 in.....	4 ins. per minute
2½ in.....	6 ins. per minute

Where drilling hole traverses fissures or joint planes or drilling near a faulted zone there is reduced jambing of Wave Drill.

The Wave Generator can be driven by Electric Motor or any form of Prime mover

Patented in the Chief Countries of the World.

Patented in the Chief Countries of the World.

for long working periods. The Plant can be worked by unskilled labor. The working pressures are within perfectly safe limits. Wave Power is transmitted through "Flexstel"—a Patented Flexible Steel Pipe Line tested hydraulically up to 9 tons pressure per square inch. Wave Power can be transmitted through permanently fixed plain piping. The complete equipment is made to withstand the roughest usages of practical mining.

There are no Mechanical Springs in the Equipment as the basic scientific principle of Wave Transmission, viz., the Storage of Energy in fluids, is practically applied. A distinct feature of the Dustless Rock Drill is the independent automatically synchronized rotation of the Drill Steel. No splines used. Any standard Drill Steels can be used with any Wave Plant. The Cradle is made to suit standard rigs.

Water—the medium for carrying the Wave Power—is continuously passed under pressure down the centre of the Drill Steel to the drill point, and this supply can be controlled and varied by the operator as he works the drill. The running water helps to keep the drill cool.

The prompt and continuous clearance of debris eliminates the cumulative effect associated with air drilling, and the natural result is the drilling speed. Wave Power correspondingly increases. The drill always works on the virgin face of the rock. Dry drilling, if required can be done on a closed Water Pipe Line, and does not involve any serious or expensive alterations in the Wave Equipment.

Wave Power reliably secures dustless rock drilling with out extra water cost. With certainty it eliminates all dust, and effectively overcomes the cause—dry dust—that creates miner's Phthisis—the dreaded disease peculiar to the Mining Industry.

Actual comparative drilling results on hardest Cornish Granite show a saving in power and time of more than 50% over compressed air. On the basis of equal power consumption the drilling results by Wave Power are more than double that by compressed air.

Wave Plants work with any ordinary Drill Steels varying in diameter from 1 inch to 4 inches at 2,400 blows per minute or whatever number of blows conditions require. One Chuck is only necessary for the whole range of Drill Steel sizes named.

DORMAN Self-Contained DUSTLESS WAVE POWER ROCK DRILL

Generator can be worked close up to Rock Face

INDEPENDENT and Automatically synchronised Rotation of the Drill Steels on the return stroke of the Hammer. No Splines used. Any Drill Steel used from 1-in. to 4-in. bits with one chuck only. The high frequency makes for ease in collaring holes as Wave Power impulses arrive

continuously at all lengths of stroke from zero. The running Water conveying the Power converts all the rock debris into liquid sludge.

Controlled by Drill Operator. Keeps Drill Cool. The bit always operates on the virgin rock face.

DUSTLESS Drilling without Increased Equipment or Power Costs.

WAVE POWER COSTS compared with COMPRESSED AIR POWER COSTS

Using Electricity as the motive Power at 3d. per unit, Wave Power shows a Saving of the Power Costs alone of approximately 16/- per 100 feet when horizontally drilling short holes (4 feet

deep). With deeper holes (20 feet deep) and fewer changes of drill bits Wave Power would show greater savings of the power costs than 16/- for each 100 feet drilled.

DOWN HOLES drilled by this plant to a depth of 20 ft. at Double the Speed of a Steam Driven Piston Drill

Comparative tests have been made by an Independent engineer of a Wave Power Rock Drill with the latest pattern of a Compressed Air Drill, both horizontally drilling the same diameter holes, and using same steels, through a 4 foot

thick block of hardest Cornish Granite. The Wave Power Generator and Air Compressor were driven by an electric motor. In each case 4 steels were used, starting with a 2 inch bit and finishing with 1½ inch bit.

The power both consumed when drilling and with the drill shut off was recorded and results in units given below

- a. Time drilling hole through 4 ft. block including time to set up drill for next hole.....
- b. Net drilling time.....
- c. Time occupied in changing Steels and setting up drill for next hole
- d. Power consumption when drilling
- e. Power consumption when drill was shut off.....
- f. Power cost when drilling in units (K.W. hrs.) ($\frac{b \times d}{60}$)
- g. Power cost when drill shut off ($\frac{e \times f}{60}$) in units.....
- h. Total power cost (f + g).....

COMPRESSED AIR	WAVE POWER
17 minutes	10½ minutes
13 minutes	6½ minutes
4 minutes	4 minutes
17.78 K.W.	11.9 K.W.
6.97 K.W.	7.0 K.W.
3.85 units	1.29 units
.464 units	.467 units
4.314 units	1.757 units

Wave Power drills at twice the speed when using only two-thirds of the power consumed by Compressed Air both working under the same conditions viz., 6½ minutes compared to 13 minutes taken by Compressed Air, therefore, Drilling by Wave the Power cost is only one-third the cost of drilling by Compressed Air, viz., Wave Power costs 1.29 units whereas Air Power costs 3.85 units per foot drilled.

costs per foot drilled, therefore conservatively stated Wave shows savings in Power and Time alone of more than 50%.

There are no Mechanical Springs. Lower Maintenance costs. Absolute Portability. The plant can be worked by unskilled labor and the working pressures are within perfectly safe limits. Fine fitting pistons not necessary thereby reducing maintenance costs. Wave Power Hammer is water lubricated.

Where the drilling hole traverses fissures or joint planes or drilling near a faulted zone there is reduced jamming of Wave driven drill.

Worn Hammers replaced at small cost without the necessity of the scrapping or regrinding of the Wave Rock Drill Body which continues workable. This is a distinct saving in maintenance cost compared with Compressed Air practice.

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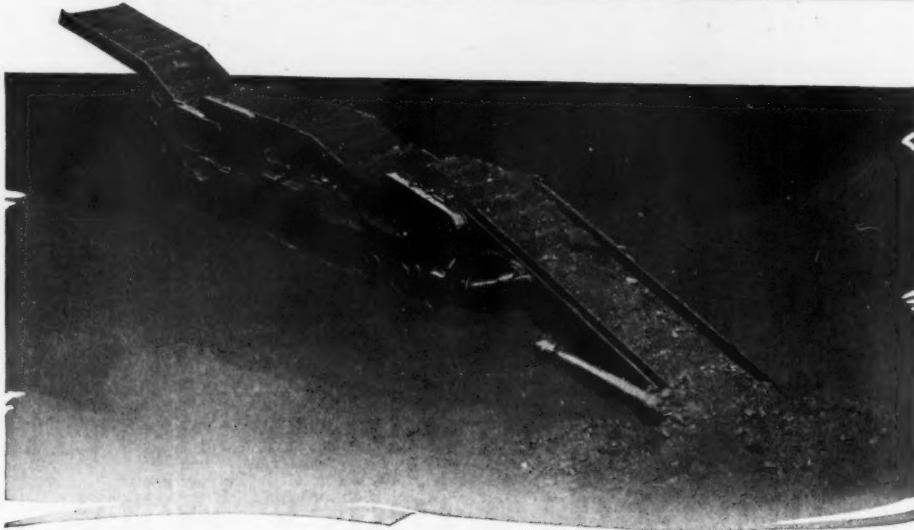
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To meet these exacting requirements deep-groove ball bearings made by the Hess-Bright Manufacturing Company are used throughout. Operating in sealed

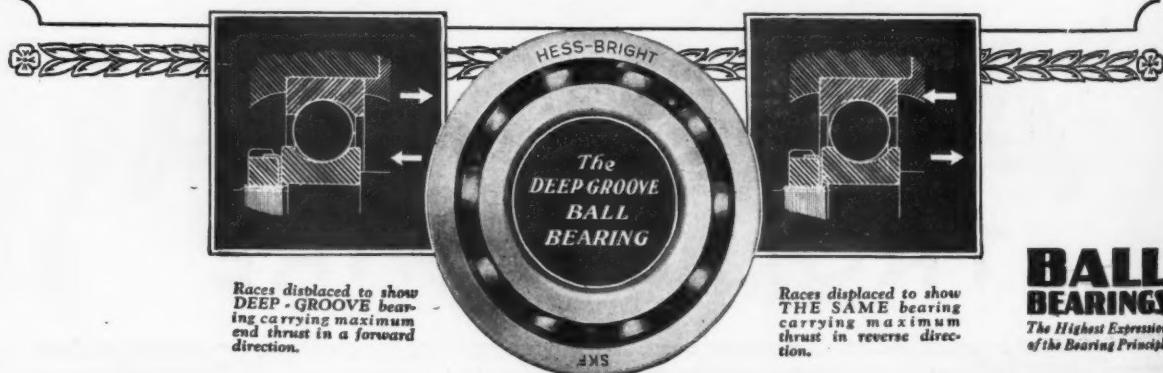
housings dust and grit cannot find their way into the bearings nor can the lubricant leak out. Furthermore both radial and thrust loads in combination are taken by this type of bearing without developing appreciable friction or noticeable wear. As a result bearing adjustments and renewals are unnecessary.

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Shear Pin Sprocket



Two "Leyner-Ingersoll" Drills driving tunnel heading in Pennsylvania

"Leyner-Ingersoll" Drifters

Drills Famous for What They Do

No rock drill stands the test of time unless it does better work at less cost. Design, material and manufacturing methods are important only because without intelligent solution of these factors no drill can stand this test.

It is easy to check the worth of any rock drill. The answer is found on the record sheets of users, which tell how much money was spent for a certain footage drilled.

The analyzation of thousands of such record sheets, recording drilling under all rock and labor conditions, would furnish dollars-and-cents proof of the superiority of "Leyner-Ingersoll" Drifters.

Bulletin 4038

INGERSOLL-RAND COMPANY, 11 Broadway, N. Y.

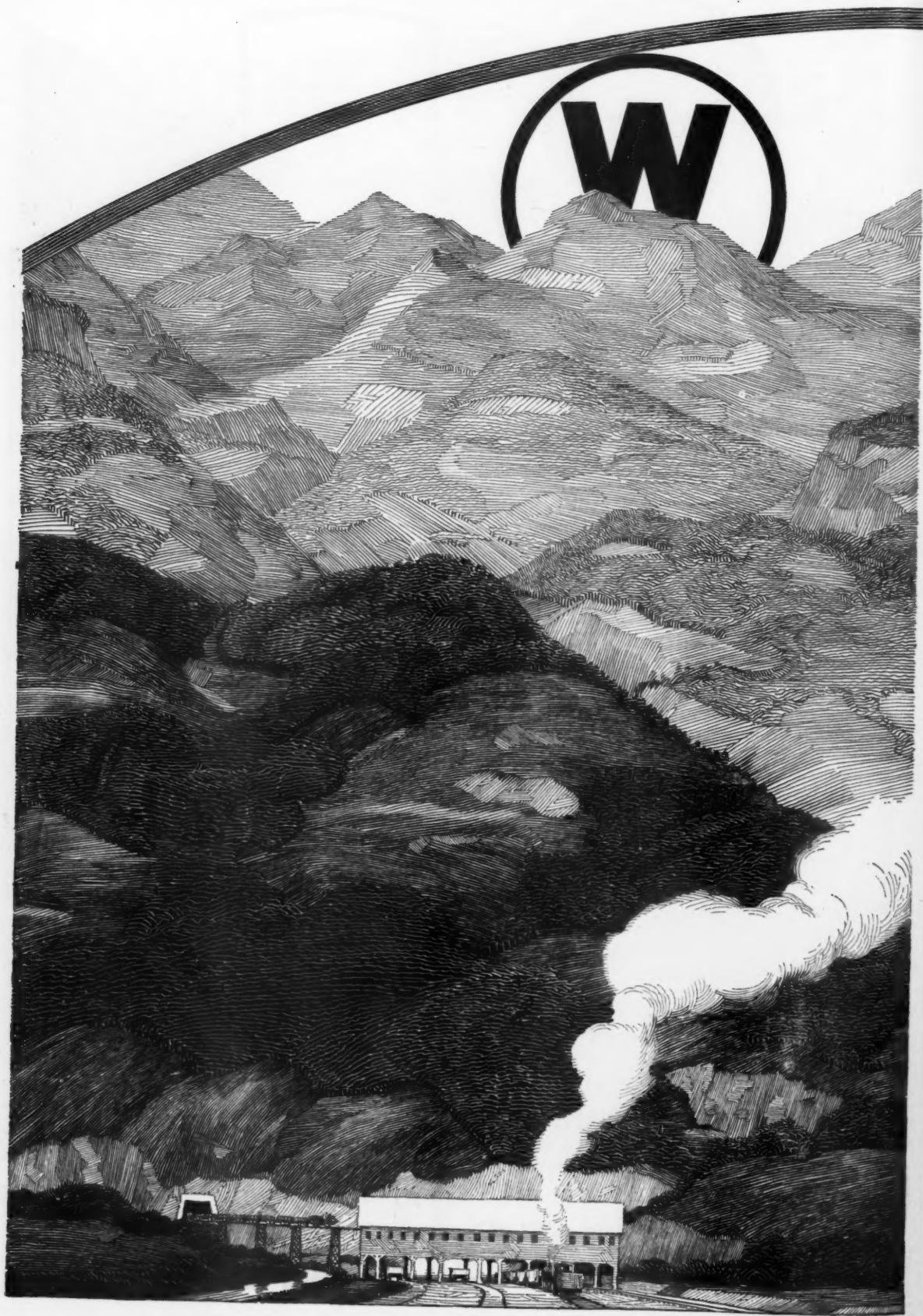
Offices in all Principal Domestic and Foreign Cities

For Canada refer Canadian Ingersoll-Rand Co., Limited, 260 St. James St., Montreal, Quebec

116-L1

Ingersoll-Rand

June, 1923



Back of the Unmined Mountains of Coal.

In an industry that has doubled its production capacity every ten years since its inception, Westinghouse has more than kept pace with progress. Coal mining methods of today show vast improvement over those of fifty or even ten years ago.

Ahead lies the future with its immeasurable job of claiming the yet unmined mountains of coal. And if coal, as a fuel, is to maintain its place in industry, greater still must be the improvements in methods of production—coal costs at the mine must come down.

Back of the coal men who are striving to maintain lower production costs, is the tremendous Westinghouse organization, with its research, engineering, manufacturing and maintenance resources. As in the past, Westinghouse electrical equipment will solve many production problems of the future.

WESTINGHOUSE MINE SERVICE STATIONS

Philadelphia	Cincinnati
Huntington	Chicago
Johnstown	St. Louis
Pittsburgh	Denver
Atlanta	Salt Lake City

Westinghouse Electric & Manufacturing Company
East Pittsburgh, Pa.
Sales Offices in All Principal American Cities



Westinghouse



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More than 20,000 properties in the United States, Canada, Mexico and the territorial possessions of the United States have been appraised by The American Appraisal Company. The extent of this service in each State is indicated by the map in connection with the key below:



**An appraisal service that
extends to every state
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For more than a quarter of a century, American Appraisal service has been used by the business men of America.

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This nation-wide endorsement is due solely to the definite superiority of American Appraisal Service. From the time when this company was founded, more than a quarter of a century ago, until today, when its staff numbers more than 800 specialists, it has been guided by a single ideal—the rendering of the utmost in appraisal service.

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Pittsburgh
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The Canadian Appraisal Company, Ltd., Montreal, Toronto

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THE ROESSLER & HASSLACHER CHEMICAL CO.

709-717 Sixth Avenue, New York, N.Y.



FOR THE MINING INDUSTRY

SODIUM CYANIDE 96-98%

CYANOGEN CONTENT 51-52%

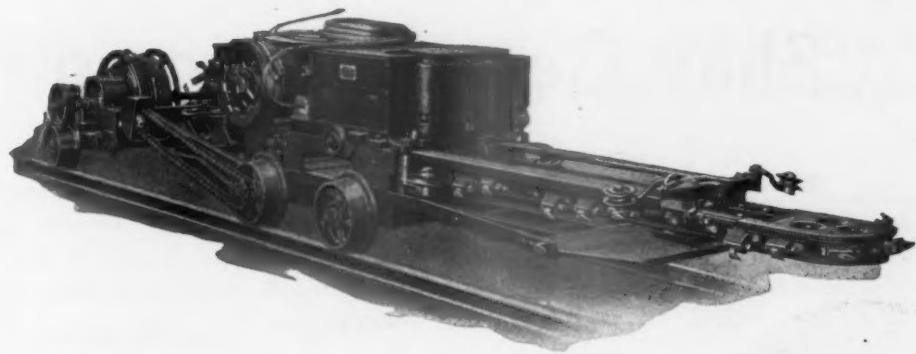
ZINC DUST

HIGH PRECIPITATING EFFICIENCY
GRADE

SODIUM SULPHIDE

60-62% CONCENTRATED FUSED

and other Chemicals



The New—

UNIVERSAL CONTROL SHORTWALL

In engineering value the Universal Control represents coal cutter perfection, developing possibilities long dormant in the Shortwall Machine.

It has power on both rope drums, with high and low speeds for both ropes.

What is more, the Variable Feed enables the Universal Control to work just as fast as conditions permit—on either right or left rope, at either high or low speed.

This combination of speeds and variable feeds is the means of securing increased production at lower cost.

While the performance of the Universal Control is remarkable, still there is no violent change in design or handling as compared to the older Goodman Machine. In fact, the new machine affords merely an extension and a double application of old and familiar Goodman Shortwall features.

For three years the Universal Controls have demonstrated what they can do. Everywhere they have won enthusiastic commendation.

Write for this:



A 56-page book describes the Universal Control. This book is free and contains worthwhile information for all coal men.

Write for Book 222-M today.

(21)

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Writes One Operator of Shay Geared Locomotives:



"The Shay is the best and surest power on the market. It is very economical in operation. It will cling to the roughest track and handle a larger tonnage than any other kind of power on the market today."

The Shay does cling to rough track. And it stays on at curves

that would derail a rod engine. It takes heavy loads up steep grades, it works on light, roughly laid track—it does everything that can be asked of an engine.

If you do not know what the Shay will do under conditions like yours, write and ask. A request for information will not obligate you.

LIMA LOCOMOTIVE WORKS, Incorporated

17 East 42nd St., New York

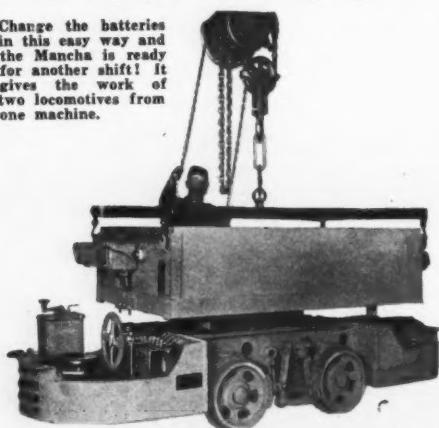
Lima, Ohio



STORAGE BATTERY LOCOMOTIVES THAT GIVE 24-HOUR-A-DAY SERVICE!

No Delays for Re-charging

Change the batteries in this easy way and the Mancha is ready for another shift! It gives the work of two locomotives from one machine.



This Mancha Standard-A type is designed especially for metal mines. It is the result of years of study and experience. All that the Mancha Engineering Department have learned through solving scores of mine haulage problems is at the disposal of any mine operator, and with no obligation.

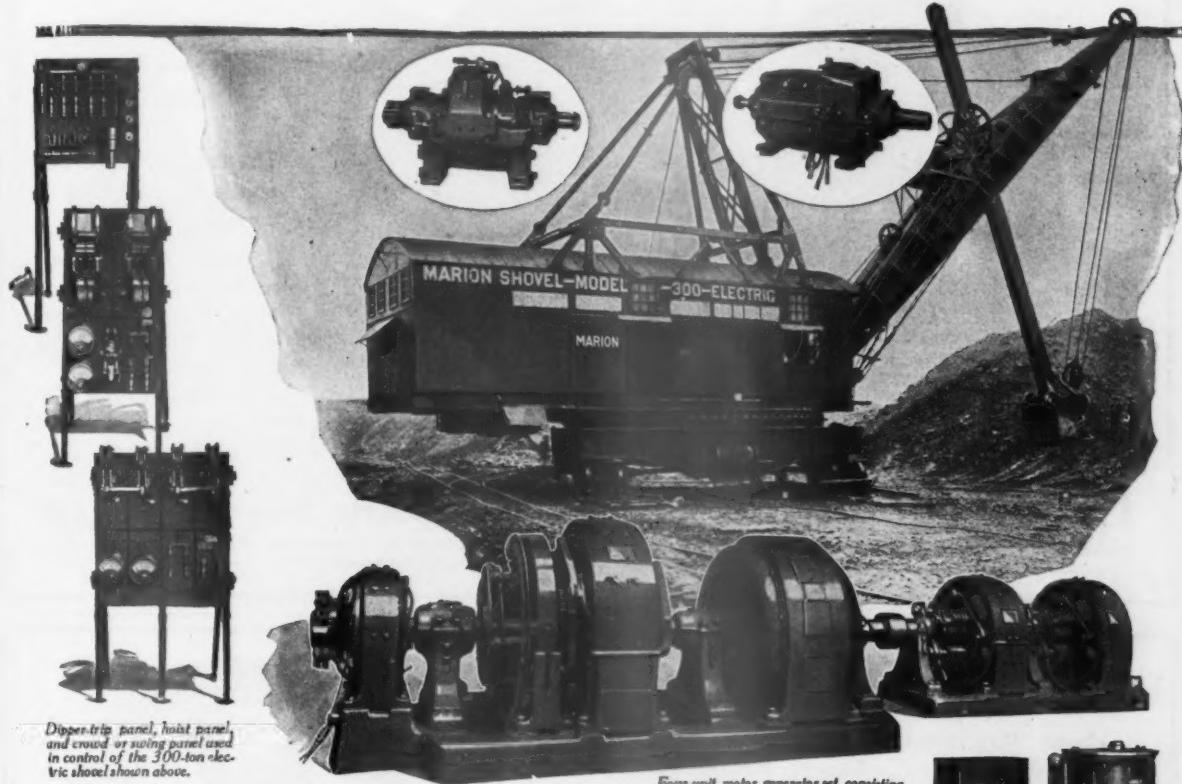
Double service! That is what this Mancha Standard-A Locomotive delivers. It's a storage battery locomotive that can be kept at work continuously, twenty-four hours a day. It doesn't need to be kept out of service to be re-charged. Just change the batteries, in the quick, easy way shown in the illustration, and then the Mancha is ready for another full shift. It gives the work of two locomotives from one chassis. It enables you to cut your investment in hauling equipment almost in two. And it is built to withstand the hardest of day after day mining conditions.

THE MANCHA STORAGE BATTERY LOCOMOTIVE CO.

1909 S. Kingshighway, St. Louis, Mo.

Representatives in All Principal Cities.

The increasing necessity for maximum efficiency in all mining operations requires that every available method for improvement be applied



Dipper-trip panel, hoist panel, and crowd or swing panel used in control of the 300-ton electric shovel shown above.

Four-unit motor generator set consisting of a synchronous motor, exciter, and three direct current generators.

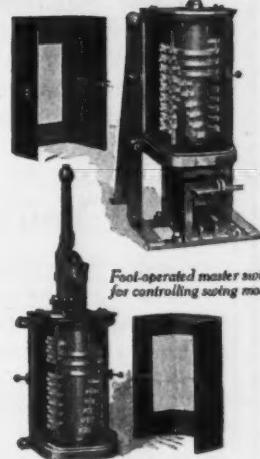
Bigger bites at less cost with the electric shovel

THE electric shovel has become an immense factor in mining and excavating. Coal veins too close to the surface for safe shafting, yet too deep for old-method open-cut mining are being stripped electrically with very profitable results. Open-cut limestone quarrying, once sluggish, now can keep pace with milling and loading. Bulk loading and big-scale digging can be done nearly twice as fast and at about half the old cost.

The 300-ton electric shovel, illustrated above, operates with greater power economy and fewer men—and cuts deeper over a wider radius than any predecessor.

All the electric equipment except the crowd motor on the boom, is located in the 50 x 22 foot cab. This equipment consists of one four-unit motor generator set with direct-connected exciter, two hoist motors geared to a common shaft, one swing, one crowd, and one dipper trip motor.

G-E engineers, experienced in design and manufacture of electric equipment for shovels, offer capable co-operation to manufacturers. Ask the nearest G-E office for further information.



Foot-operated master switch for controlling swing motor.



Hand-operated master switch for controlling the crowd or hoist motor.

General Electric Company

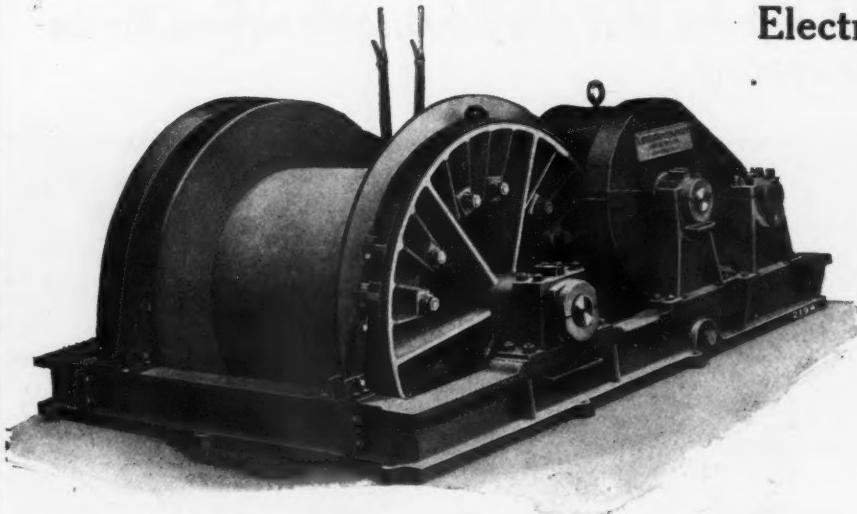
General Office
Schenectady, N.Y.

Sales Offices in
all large cities 43B-593

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LIDGERWOOD MINE HOISTS



Electric

Steam

*Built for Every
Type of Mine
Service*

The hoist is an important unit in the operation of a mine.

Proper design, good workmanship, good material make the Lidgerwood Hoist a reliable unit in your work.

SPEED - STRENGTH - ECONOMY

Lidgerwood Mfg. Co.

Philadelphia Pittsburgh Chicago Detroit Seattle Los Angeles Cleveland Charleston, W. Va. London, England
Sao Paulo, Brazil Rio de Janeiro, Brazil Apartado, 813, Mexico, D. F.

96 Liberty Street, New York

What We Put Into Eurekas

Fine Materials—highest grades of strong coke and charcoal pig iron. **Expert Metallurgy**—by men who KNOW through long experience. **Proper Chill**—depth varying according to weight, design and service required. **Skillful Annealing**—which removes all strains due to chilling.

What You Get Out of Eurekas

Longer Life—quality in materials plus skill in workmanship can have no other result. **Economy in Service**—experience has proved that Eurekas are the easiest running wheels made, hence the biggest oil and power savers. **Efficiency in Performance**—Eurekas today represent improvements developed through 38 years' experience in wheel construction.



Outside Valve Type, Self-Oiling
Eureka Wheel

YET THE FIRST COST OF EUREKAS
IS NO MORE THAN THAT OF OTHER
WHEELS—WELL SEND A SET ANY-
WHERE ON APPROVAL

HOCKENSMITH WHEEL & MINE CAR CO.

PENN, PENNSYLVANIA (PITTSBURGH DISTRICT)

The Valves that Safeguard “Life and Property”



GOLDEN-ANDERSON

**Patent Automatic Double - Cushioned
Triple - Acting and Non - Return Valves**

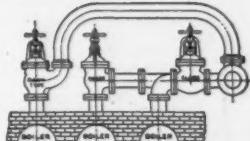
- 1st. Prevent expensive shut-downs—Automatically close in case of boiler or steam line ruptures.
- 2nd. Make back flow of steam impossible.
- 3rd. Equalize pressure between boilers, automatically—quickly pay for themselves in reduced coal bills alone.
- 4th. Absolutely protect men inside of “dead” boilers.
- 5th. Valves fitted with “Double Corliss” dashpots. Absolutely cushion valves—no hammering or sticking.
- 6th. Provide for every contingency by “automatic” testing in service feature—valves closed from floor to remote points.
- 7th. Heaviest and most correct mechanically constructed and operated automatic valves made.

Also made in plain non-return style for protecting the boilers only. Angle, globe and elbow pattern.

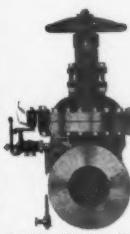
“No Shut-Down When a Tube Bursts”

4100

**DOUBLE EXTRA HEAVY VALVES
ORDERED BY THE LARGE
IRON AND STEEL COMPANIES**



“Hosts of References”—Every Valve with an Absolute Guarantee



Golden-Anderson Pat.
Cushioned Combined
Throttle and Auto-
matic Engine Stop
Valve

1. Can be operated by electricity from distant points, insuring instant checking of steam to runaway engine, or any part of the entire plant piping system.
2. Equipped with double Corliss Dash Pots. No chattering, pounding or sticking is possible.
3. Double extra heavy construction; occupy minimum head room.
4. Sizes up to 20 inches.

Golden-Anderson
Automatic Cushioned
Water Regulating
Valves

for high or low pressure service are a necessity for modern water works and railroads. Positive in action and perfectly cushioned both in opening and closing. Will maintain a constant pressure regardless of the volume of the initial flow.

When fitted with electrical attachment valve can be instantly opened to full area from any number of distant points, thus insuring full pressure in case of fire, etc.

Sizes to 30 in.

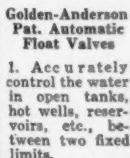


Golden-Anderson Patent
Automatic Controlling
Altitude Valves

For automatically maintaining uniform stage of water in tank, reservoir or standpipes. Doing away with the annoyance of floats or fixtures, inside or outside. Especially adapted for water works and railroads.

Sizes to 30 in. Three ways of closing these valves:

1. Automatically by water.
2. By electricity, if desired.
3. By hand.



Angle or
Strt. Way
up to 30 in.

1. Accurately control the water in open tanks, hot wells, reservoirs, etc., between two fixed limits.
2. Cushioned by both water and air. No metal-to-metal seating, pounding, sticking or chattering.
3. Can be regulated to operate quickly or slowly on High or Low Pressures. Float swivels to any angle desired.
4. Construction Heavy Iron Body Bronze mounted. Virtually indestructible, due to service.

GOLDEN-ANDERSON
Cushioned Water Relief Valves
Automatically Relieve Excess Pressure—
Prevent Stress, Strain and Bursting Mains

Essentials of a durable, economic and reliable relief valve are first-class material and workmanship, correct mechanical construction and operation, with no metal-to-metal seats, and perfect air and water cushioning to avoid shock or hammer on the various pressures, all of Golden-Anderson. Patent Automatic Cushion Water Relief Valve.

Sizes to 30 in.
Angle and Globe Patterns



Golden-Anderson
Patent Automatic Double Cushioned Check
Valve

Automatically prevents reverse flow of pressure. Perfectly cushioned to prevent shock or hammer. Especially adapted for water works to prevent disastrous reverse flow of pressure due to pumps stopping.

Arranged so that quick or slow operating may be obtained.



Sizes to 30 in. Angle or Globe

Golden-Anderson Valve Specialty Co., 1216 Fulton Bldg., Pittsburgh, Pa.

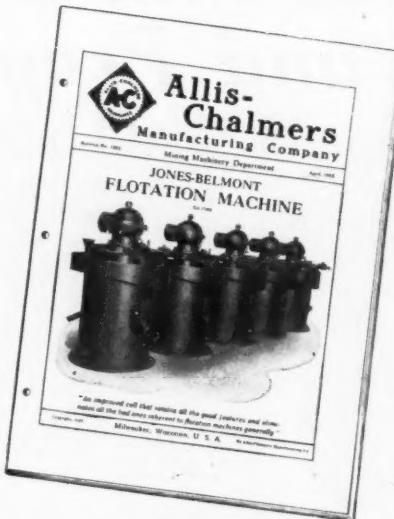
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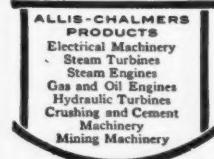
Jones-Belmont
FLOTATION
MACHINE

Bulletin 1822



"An improved cell that retains all the good features and eliminates all the bad ones inherent to flotation machines generally."

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MILWAUKEE, WISCONSIN. U.S.A.
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**Leschen Wire Ropes and
-Aerial Wire Rope Tramways-**

Are Dependable at all Times, - Even Under Bad Conditions.

A black and white illustration showing a complex network of aerial wire ropes and pulleys suspended between tall wooden towers in a dense forest. A large bucket or gondola hangs from one of the ropes, likely used for transporting materials.

In business since 1857

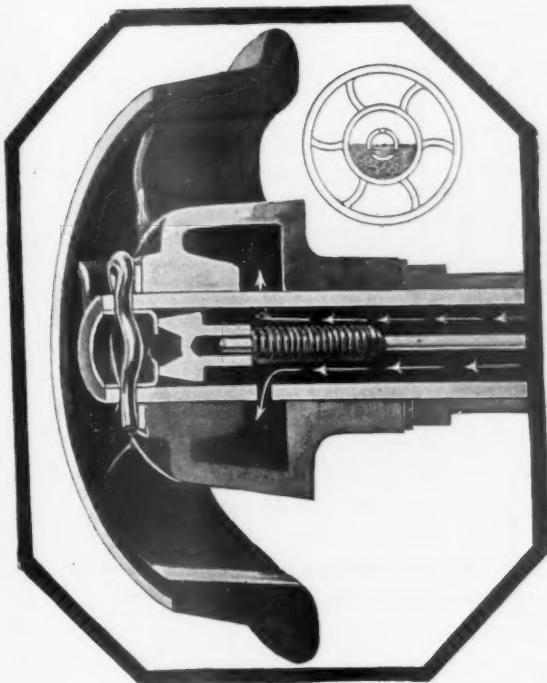
**A. Leschen & Sons
Rope Company
St. Louis, Mo.**

New York,

Chicago

Denver,

San Francisco



Oil flows from axle into wheel when turning

When wheel is at rest, oil flows back into axle seeking its level

Hollow Axle Trucks Make A Well-Balanced Mine Car

BY careful designing, the Hollow Axle Truck combines all the qualities demanded of a satisfactory mine truck, without over-emphasizing any one detail.

It provides a constantly lubricated bearing, without making oiling difficult.

It provides an axle 50 per cent stronger than usual, without increasing the weight of the truck.

It provides an easy-rolling mine car without complicating design.

It secures simplicity and consequently low maintenance without sacrificing advantages claimed by more complicated construction.

Experience of over eight years, covering thousands of trucks, has perfected every feature of Hollow Axle design.

SOUTHERN WHEEL COMPANY

St. Louis, Missouri

Birmingham, Ala.

30 Church St., N. Y.

Authorized Agents

Superior Supply Company, Bluefield, W. Va.

Norton Machinery & Supply Co., Norton, Va.

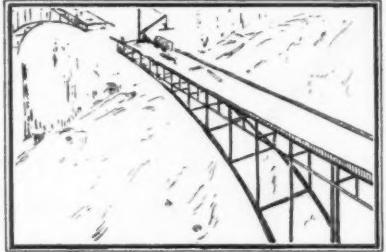
The Pennsylvania Electrical Repair Co., Pittsburgh, Pa.

Interesting literature describing the Hollow Axle Truck, and what it can do for you, will be sent you at your request.

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SPECTACULAR ACCURACY



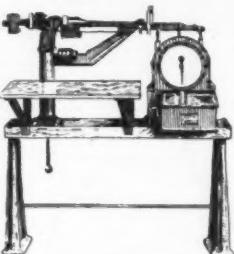
and MINE TONNAGE

PUBLICITY and applause attend the spanning of a dizzy chasm where bridging is begun from opposite cliffs and accurately meets in the center. Spectacular—yes, and praiseworthy. But far more important is accuracy and precision in commonplace tasks.

Send for booklet describing these and many other economies they will work for you.

STREETER-AMET AUTOMATIC DIAL AND WEIGHT RECORDING MACHINE

Eliminate the Human Element of Error



TONNAGE is the measure of all profit of a mine. Automatic accuracy and speed in weighing are vital factors of economy. Streeter-Amet Automatic Weighing Machines record the weight of moving trains, eliminate chances to forget, and reduce tipple force.

STREETER-AMET WEIGHING & RECORDING COMPANY, CHICAGO, ILLINOIS

Economy in Rock Drill Performance



The elements which determine economy in drilling are footage drilled, power consumption, and low repair cost. The Pocket-In-Head feature makes possible a harder and more uniform stroke than is possible with drills lacking this feature. This guarantees you a much greater footage.

The Pocket-In-Head feature makes possible a reduction in air consumption and a corresponding reduction in the power requirements. This also means a decided saving.

Drill runners who know Cleveland Drills, prefer them as they are easier to handle, have less 'kick-back' and do not tire out the driller as do other drills lacking the Cleveland features. The result is a great efficiency on the part of the driller, a greater amount of work done, minimum crystallization, and minimum breakage and wear.

The economies possible with Cleveland Drills are well worth your investigation.

Try one and be convinced



THE CLEVELAND ROCK DRILL CO.

3743 EAST 78TH STREET. CLEVELAND, OHIO

Herco Blasting Powder

for

Hercoblasting

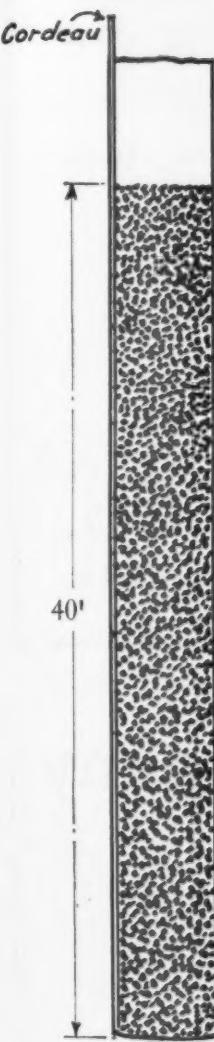
(A New Blasting Method)

A more compact load can be made with *Herco* Blasting Powder than with other granulations. This is an advantage for Hercoblasting, in which black powder is column-loaded in well-drill holes and fired with Cordeau-Bickford. Under certain conditions this new method reduces blasting costs 30 percent.

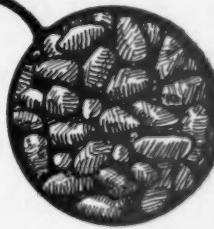
Herco Blasting Powder contains grains of various sizes. When it is poured into the hole, the finer grains fill the spaces between the larger ones, as is shown in the drawing below. Six hundred pounds of *Herco* Blasting Powder loaded in a hole six inches in diameter makes a column approximately thirty-five feet high, as against about forty feet for FF granulation. The greater density of *Herco* Blasting Powder makes it possible to concentrate a heavier explosives charge at the toe, where it is usually most needed.

Herco Blasting Powder is also well suited for pocket loading in chambered holes.

For further information about Hercoblasting and *Herco* Blasting Powder, write to the Hercules Powder Company, 934 King St., Wilmington, Del.



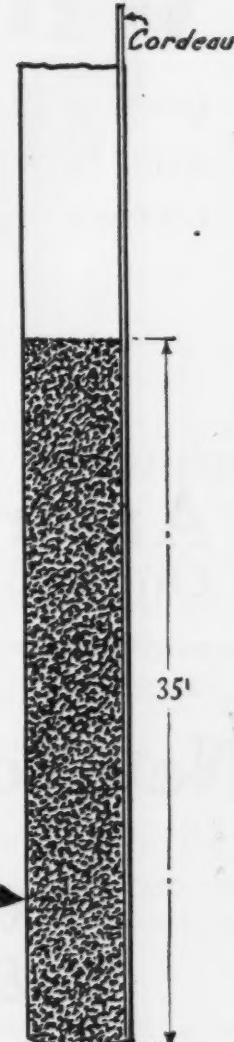
Six hundred pounds of F or FF blasting powder loaded in a six-inch hole makes a column about 40 feet high.



FF Granulation
(Actual Size)



Herco Powder
(Actual Size)



Six hundred pounds of *Herco* Blasting Powder loaded in a six-inch hole makes a column about 35 feet high.

HERCULES

POWDER COMPANY



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Chattanooga, Tenn.

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Huntington, W. Va.
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Louisville, Ky.
New York City
Norristown, Pa.
Pittsburg, Kan.

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Pottsville, Pa.
St. Louis, Mo.

Salt Lake City, Utah
San Francisco, Calif.
Wilkes-Barre, Pa.
Wilmington, Del.

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WIRE

electrical, rope, barbed, plain, nails, tacks, spikes, bale-ties, hoops, springs, netting, wire fences, steel posts, steel

gates, trolley wire, rail bonds, flat wire (strip steel), piano wire, horse shoes, round and odd-shape wire, screw stock, concrete reinforcement. Aerial Tramways.

Illustrated books describing uses, free

American Steel & Wire Co.

CHICAGO

NEW YORK

New York Engineering Company

SPECIALISTS IN

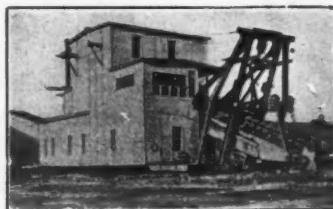
*Gold and Tin Placer
Engineering and Equipment*

"EMPIRE"

Gold and Tin Dredges

"EMPIRE"

Prospecting Drills



PLACER

Mining Equipment

SLUICES, RIFFLES, PIPE
LINES, GIANTS

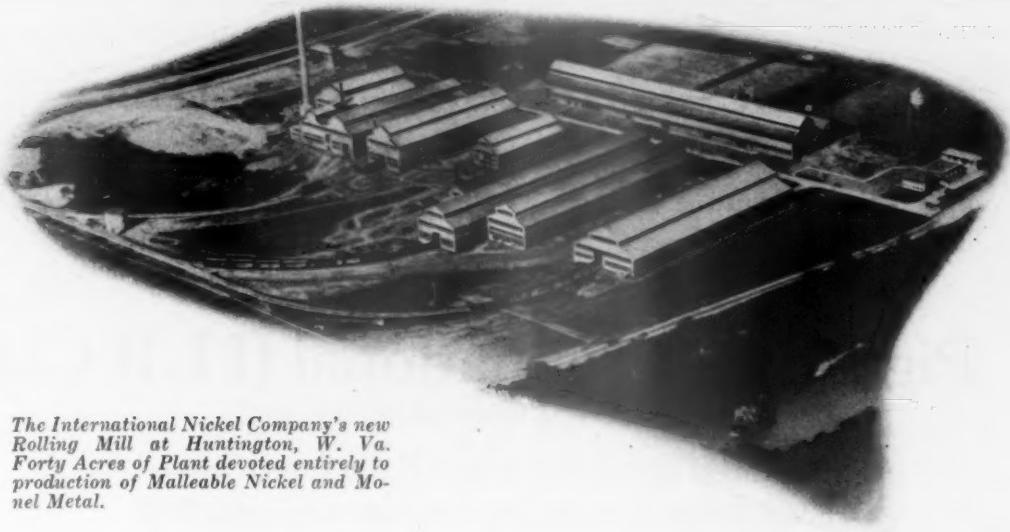
Our factory, located at tidewater at Yonkers, N. Y., is most favorably located for export shipments by water as well as for domestic shipments via New York Central lines, and is within easy access of the raw materials markets. Our manufacturing facilities, coupled with our experience in placer fields the world over, enables us to render a service that is a guarantee of satisfaction

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Office
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NEW YORK ENGINEERING COMPANY

Works
Yonkers,
N. Y.



The International Nickel Company's new Rolling Mill at Huntington, W. Va. Forty Acres of Plant devoted entirely to production of Malleable Nickel and Monel Metal.

Equipping To Meet Increasing Demand

THIS big, new mill has been erected to provide Monel Metal in the quantities demanded by its rapidly extending uses.

In mines of every type, Monel Metal is used for pump rods, valves, impellers, etc. At coal mines, Monel Metal shaker screens are outwearing bronze at least two to one and steel four to one.

Wherever there is a need for a material with great resistance to wear and to corrosion, Monel Metal will render exceptional service.

Investigate the economies of Monel Metal for your own operations.

THE INTERNATIONAL NICKEL COMPANY

67 Wall St., New York City

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Monel metal

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Zinc—Anaconda Electric

99.9% PURE ELECTROLYTIC ZINC

Produced at the refineries of the Anaconda Copper Mining Company at Great Falls and Anaconda, Montana

Pig Lead—International (ILR Co)

DESILVERISED, COMMON AND CORRODING

Produced at the refineries of the International Lead Refining Company at East Chicago, Ind.

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UNITED METALS SELLING COMPANY

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Exploration Department for the purchase of
Metal Mines and Metal Mining Companies

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P O T A S H

We are organized to insure your thorough satisfaction and one order of "Kemfert" will make you a permanent user. Let us quote you the "Kemfert" price on any desired quantity

Write Us for Quotations

AMERICAN TRONA CORPORATION
Woolworth Building, New York City



DU PONT GELATIN
always a standard explosive
now materially improved

DU PONT Chemical Engineers have materially improved two important qualities in du Pont Gelatin Dynamite.

First, less fumes. This means the saving of thousands of dollars to mine operators through the reduction of wasted time after blasting.

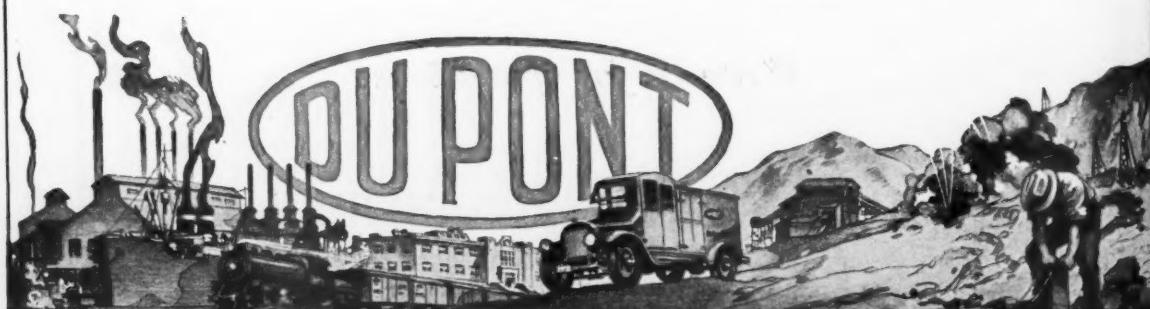
Second, the freezing point is still further reduced—this at no sacrifice of the plasticity and waterproof qualities for which this explosive has long been noted.

This advance is in line with du Pont leadership—constant endeavor for improvement in existing products as well as the development of new products, in order that each user will be supplied with the particular explosive that will do his work best at least expense.

E. I. DU PONT DE NEMOURS & CO., Inc.

Explosives Department

WILMINGTON DELAWARE



EXPLOSIVES ~ SERVICE

**Save
from Sun and Rain
with these**

New Government Tarpaulins

**35
Carloads**

**Largest
Lot
of
Army
'Paulins
ever
sold**

**Plain
or
Waterproof**

20 oz. Duck

Look no further for new heavy covers. Suitable for numerous purposes. Cut them into brattice cloth. Their cost is so low you can cut them into brattice cloth and have better quality cloth cheaper per square foot than any material obtainable.

It's the bargain of your lifetime.

The Low Price Will Astound You

The enormous purchase of 7,000,000 sq. ft. permitted us to buy for a fraction of the present market price. All surplus stock. The government had no use for them and accepts the loss. That is why we can sell at half the market price and many times below their cost.

ALL NEW—NO. 4—20-OZ. DUCK, MADE IN STRICT COMPLIANCE TO THE HIGH GOVERNMENT SPECIFICATIONS

SIZES			
17x30	20x20	20x40	
With our manufacturing facilities we are cutting and finishing some in the following sizes:			
10x10	10x17	10x20	15x17
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INDUSTRIAL COOPERATION

CIVIC PRIDE is a great asset to any community, any state, any nation. All of us are intrigued with the idea that we have even in a small way contributed something to the betterment of our community.

In this issue are several articles giving intimate pictures of life in remote mining centers—east and west. In one of these camps 475,000 tons of dirt were removed in order that a baseball park might be installed. In another a beautiful little city came where once there was naught but sage brush.

The new order of things in the mining industry is inspirational—gone are the monotonous rows of identical houses; gone is the shiftless half-hearted effort merely to keep the weeds down. Into both management and worker is being born the pride of creation—the desire for individuality—the little seed of civic pride.

Mining companies are anxious that their employees shall be contented, but what is more encouraging is that the miners and their children are themselves anxious to take advantage of the opportunities offered them.

In the remote mining fields of New Mexico and Arizona the miner's child has the same opportunity for self development as the child in the nation's capital. Some of the finest high schools in the country will be found in mining districts.

Mingo and Logan counties in West Virginia are fair examples—because there has been so much said against the operator in these districts. We are publishing in this issue photographs of a few of the houses, high schools and libraries—in these counties—homes and schools of which any community might well be proud.

It has not been so long ago that the mountaineers living in these hills were the subject of deepest concern to the welfare of the nation. They had gone to seed. Their children were of the snuff-chewing, hook-worm variety. A very worthy charitable project was launched that proposed to literally yank these children from their homes and force upon them the rudiments of every day civilization. The project succeeded although at first there was even gun resistance. Today that project, supported by the contributions of those interested, and through the efforts of the children themselves, furnishes to a considerable number of children the opportunity to be American—as we understand the term.

But mining companies do not attach the shadow of charity to the opportunities they are bringing the children of these remote centers. Every child can and does truthfully feel that "my daddy helped in giving me these advantages," because "Daddy" is a partner in the enterprise of capital and labor in the creation of a means of employment for both. Capital and labor are daily—if slowly—learning the big lesson of interdependence,

ence, of mutual responsibility, and INDUSTRIAL CO-OPERATION.

Employers and employes cannot be forced to cooperate. Only a voluntary getting together on the familiar ground of mutual interests will bring about the kind of cooperation that is needed; and when they adopt a basis of common understanding and mutual trust for the solution of their common difficulties, there will dawn a new era in the industrial world in which costly strikes will be as distasteful to employes as they are now to the public. When this happens there will be no need or demand for government interference.

An ideal relationship between employers and employes in the great industrial enterprises of the country never has been attained, possibly because there has been no individual or organization whose vision was broad enough to point the way. The subject has been treated too superficially and the fundamentals have not been fused together into a definite plan. Efforts to deal effectively with the problem by means of legislation have failed, and these efforts have demonstrated that legislation, at best, would be a makeshift of doubtful expediency.

The experiences of the past few years with labor disputes have been exceedingly costly to the nation; but experience is the best teacher, and if, out of the experiences of the past a new era in the industrial world is evolved through a better understanding between employers and employes as to their needs, their duties, and their responsibilities, the progress of the nation will have been greatly enhanced and a laudable purpose will have been served. Selfishness, bitterness, suspicion and other attributes of that character which lead to misunderstandings should have no place in the adjustment of controversies between classes.

The demand for the recognition of a new relationship between employers and employes that will eliminate bitter disputes and costly strikes and enable both classes properly to serve themselves, each other, and the public, is growing tremendously. The general movement toward the solution of labor difficulties through a plan of industrial cooperation under which both employers and employes will recognize and conscientiously acknowledge their interdependence and their joint duty to the public, has gained great impetus during the past few months.

We refer to the Division of Industrial Cooperation of The American Mining Congress. Its platform, which promises unity of action, and eventually industrial peace in the mining industry, already has received the endorsement of more than 10,000 mining men. And while complete industrial cooperation may not be attained for many years, certainly much of good will accrue to the industry through the activities of this representative division.

A SOLID REALITY

IN THE WORK it has undertaken to promote every basis for peaceful understanding between employer and employee under the general head of "Industrial Cooperation," the Mining Congress has expected discouragements, more in fact than it has received. It has expected skepticism from a few employers; it has expected opposition from a few organizers of labor because of possible effect on their individual interests.

It has been our hope, however, that those publications which circulate among the coal industry might have as complete an understanding as possible of the purpose of this work so that this purpose might be clearly set forth. In an editorial, which has for its purpose the interpretation of the movement for industrial cooperation, Coal Age in its issue of May 10, however, characterizes this movement as "A declaration for the open shop" and "this mirage."

We wish to say most cheerfully, but most emphatically, that it is neither of these things. The Division of Industrial Cooperation bears no more relation to the open shop than it does to the closed shop. That it is not "a mirage" is shown by the solidity of endorsement which it has received. What the Division of Industrial Cooperation is, is set forth clearly in the resolution adopted at the meeting cited by COAL AGE.

Therefore, be it resolved, That the Division of Industrial Cooperation of the American Mining Congress as now organized and as planned for future development furnishes a common ground upon which employer and employee may meet for the consideration of problems of employment which affect them both.

This resolution was preceded in its adoption by this preamble:

"WHEREAS, Industrial peace will be brought about only through confidence between the management and employee;

"WHEREAS, Industrial peace is vital to the preservation of our present day civilization and the welfare of our country;

"WHEREAS, The energies of both organized employees and organized employers should be diverted from controversy to working and harmonious means of practical cooperation;

"WHEREAS, The public is interested and benefited by continuous employment and operation of productive enterprises;

"WHEREAS, President Harding in a message to Congress August 19, 1922, declared: 'It is fundamental to freedom that all men have unquestioned rights to lawful pursuits, to work, and to live and choose their own lawful ways to happiness,' most forcefully voices our viewpoint."

Neither this preamble nor this resolution have any relation to open shop or closed shop.

Let us quote another preamble: "• • • in order to form a more perfect union, establish justice, insure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity." This could as equally be a declaration for open shop, but as it happens it is the preamble to the Constitution of the United States.

It is still our hope that this national paper devoted to coal mining and coal marketing will interpret correctly and fairly the purpose of the *only* nation-wide movement which has been undertaken toward bringing about industrial peace.

WHERE THE RUB COMES

OF THE THOUSANDS of tax rulings made by the Commissioner of Internal Revenue, the Solicitor of Internal Revenue, and the Committee on Appeals and Review, probably less than 10 percent are ever published. Most of them are filed away in confidential files and carefully guarded. Instructions and rulings of a most drastic nature, promulgated by the commissioner to guide the income tax unit in the determination of questions of law and fact in tax cases, are kept secret.

The commissioner recently "authorized and instructed" the income tax unit to proceed with the re-determination of certain questions which had been decided during the term of a prior commissioner. This meant that a large number of cases, supposedly closed, were to be reopened with results that not a taxpayer in the world could possibly anticipate. The taxpayers involved received no official notification, and the few who heard some rumors about the matter and made inquiry were informed that the commissioner's instructions were of a most confidential nature.

There was no intimation or inference that these taxpayers were in any respect guilty of misrepresentation or attempted tax evasion, and it may be assumed, therefore, that the sole reason for the action of the commissioner is that in the judgment of the present officials of the income tax unit the judgment of prior officials with reference to the matters in question was wrong.

There is no justification in law for this sort of treatment. The practice of holding important rulings confidential, so that the first intimation a taxpayer has of impending danger is a thunderbolt in the form of a notice of a proposed additional assessment several months or even years after he thought his case closed, was begun during the early stages in the administration of the war profits and excess profits tax law. There can be no objection in perpetuating the practice.

How can the taxpayer know whether the ruling in his case is just in comparison with the ruling in the case of a fellow-taxpayer? How can either the taxpayer or Congress or even officials of different divisions of the income tax unit know whether the rulings in different cases are consistent and just and in accordance with the spirit and intent of the law?

The other day a taxpayer was denied the privilege of seeing the final ruling in his own case. He was told the substance of it, but was not allowed to read it. The other day a ruling was published and a few days later revoked without a word of explanation. The other day a taxpayer came to Washington for a hearing in a case which was heard two years ago at which time the same points now in question were explained and threshed out and settled apparently to the satisfaction of all concerned, and the only reason for a new hearing was that the official who first heard the case had failed to make an office report and a new official had found the case in its original state. Little wonder, it is, that cases can not be closed.

These are not isolated cases. They are representative. They happen every day at the conference room of the income tax unit at Fourteenth and B, Washington, D. C., and taxpayers wonder what is wrong. They do not know who to blame so they blame the law. Well, the law is workable. In spite of all of its intricate provisions, it is workable. It can not be administered fairly, however, unless the Bureau of Internal Revenue

exhibits the same frankness toward the taxpayer as it demands of the taxpayer.

The Bureau of Internal Revenue should not be made strictly a collection agency. It was created to serve the taxpayer as well as the government in the just administration of revenue laws. It is not serving the taxpayer when it acts arbitrarily or shows partiality, and it shows partiality when it refuses to publish its rulings.

If there exists in the minds of revenue officials any fear that the publication of these rulings would disclose inconsistencies, discrepancies, or other faults, there is all the more reason why the present system should be abandoned. We venture the opinion that its abandonment would eliminate much of the confusion, dissatisfaction and delay encountered in the adjustment of tax returns.

PANNING THE RAILROADS

ONE OF THE MOST popular diversions for the self-appointed, self-styled protectors of the public weal, the professional politicians, is that of panning the railroads. It is a fact that most active proponents of drastic railroad legislation which would interfere with private management and destroy private initiative in the operation of railroads have no financial interest whatever at stake and have nothing but purely political ends to serve. But if the railroads were not the unfortunate objects of political pandering, some other industrial enterprise would be made the goat, for political fires must be kept burning under the boilers which furnish the hot-air pressure for operating the machinery which professional office seekers depend upon to mold public opinion and carry themselves into office.

The mining industry is not satisfied with the freight rates under which its products move, but it looks askance at all proposals to further control railroad operations and fix rates by legislation, because its experience has been that every amendment to the transportation laws and every experiment in government control and every interference with private management, has been attended or followed by an increase in operating costs and an increase in freight rates. The mining industry does not favor government operation of railroads and would look upon government-ownership as a national calamity. The mining industry prefers to see the railroads left alone to work out their problems without the interference of politics, believing that private initiative will find better solutions for those problems than would be possible under the dictates of political expediency.

Unless the purpose of new legislation is to repeal some of the impractical provisions of the Transportation Act which have been responsible in large measure for the unpleasant conditions encountered by both shippers and carriers during the past few years, the law had better be left as it is, for railroad officials are beginning to find a way out of the maze of difficulties with which they have been surrounded and the roads are beginning to enjoy another era of prosperity. Mistakes cannot be rectified by making other mistakes. The railroad problems now in the process of solution should not be complicated by the introduction of new problems in the form of additional legislation. Panning the railroads and urging the application of legislative remedies of doubtful expediency never will give efficient and adequate transportation service.

THE FOUR GREAT ISSUES

"O F THE FULLNESS of the heart the mouth speaketh." On that theory, the results of a half dozen or more great national conventions, recently held, are most eloquent. Accepting the summary of the sessions as they themselves drew it, the four things to which they gave attention, almost to the exclusion of everything else, were:

- 1—Transportation.
- 2—Government regulation of business.
- 3—Taxes.
- 4—Cooperative selling.

And, if we go carefully into what was said on these four themes, one might, properly, sum all four of them in one phrase, namely, "government in business." That is, as these themes were discussed, the responsibility of government for the four conditions complained of was clearly expressed. That is, "government regulation" and "taxes" are purely political issues. Transportation was declared to be a problem solely due to political control. And cooperative selling was attributed to political activity.

It developed, also, that these are in no sense American subjects. They are subjects around the world. The program of the Chamber of Commerce convention was significant of this fact. It had on its program two outstanding speakers—one from Japan and one from France. Both of these men discussed government in business; both of them took a stand against it; and both of them were prone to congratulate America for its relative freedom from such things. Also, the gentlemen who had but returned from the meeting of the International Chamber at Rome spoke of the interest in this theme in Italy and of the growing sentiment there against government in business.

In the other and less conspicuous conventions, the underlying sentiments were the same. However, the speakers were not quite so outspoken. One or two conventions plainly were opposed to government in business, but were timid about expressing themselves lest, later, political punishment be visited upon them.

In one or two of these conventions some extended attention was paid to coal. In no convention, however, did it take a place among the four big topics; on no program was it a subject for a general discussion. From this it must be inferred—contrary to the belief of many coal operators and politicians—that the larger business interests do not consider coal, as yet, to be a first class political question. When they referred to coal—as all of them did—it was grouped under the more general headings of "transportation deficiencies" or "the tendency of government to encroach upon the realm of private business."

The significant development from these great conventions was that in every case the resolutions expressed the belief that political administrators, no matter how efficient as such, are not necessarily the best of business administrators and that the efforts to combine the two frequently result in confusion and loss of effectiveness.

These clear pronouncements by the business interests need not be expected instantly to reverse the political tendency which is all too strongly in the opposite direction. It merely means that the issue is now joined and that a great political battle over this big question is impending.

TWO THEORIES ABOUT WELFARE

OFTEN AMERICA'S phrasing of most praiseworthy doings is unfortunate. For instance, we speak of the things which an employer does to make life pleasant and employment attractive to his workers as "welfare work." The phrase is as harsh as a file with a double face; it rasps on both sides. The worker sees a thing done and then hears it described as "welfare." This leaves with him the impression that he distinctly needs somebody to look after him; that he is deficient in ability to care for his family; and that he is an object of charity. And, when the employer hears his actions couched in those distasteful terms, he ties it in with a certain phrase in the constitution and begins to suspect that the political gentlemen are establishing a definition in order, later, to write into the statutes a new sort of regulation of business. Thus the phrasing is most unfortunate in that it tends to stop rather than encourage the most human and natural development upon which America has launched for years.

Stripping this line of conduct of its objectionable phrasing and considering it on the most cold-blooded basis, we are faced with this fact. If one has a horse from which he wants willing and efficient service, he does not confine his care of that horse to mere shelter and food. Everything possible is done to put the horse in condition to work steadily and cheerfully the next day.

On the same basis, the coal operators of West Virginia are not building the most advanced industrial communities in America on sentiment alone. They know that if the family is sick, the head of the family is inclined to stay at home for the day. They know that the absence of one worker makes one process short of help, and that this tends to slow down the work of the whole mine. To avoid injury to the miner's efficiency, the operators try to keep the miners' families healthy in order to induce the man to stay at work steadily and to be in a mood to work efficiently.

Also, they know that if the family is healthy it has a larger capacity to enjoy things. Therefore, a healthy family naturally wants more things to enjoy. That, in turn, encourages the wage-earner to increase his production in order to satisfy the desires of his family.

Thus, even when viewed in the coldest-blooded way, doing things to improve the living conditions of one's workers is the best kind of "good business."

But experience has taught that in doing these things, great care must be taken to do them in exactly the right sort of a way; otherwise, they have exactly the opposite effect. Insert the element of charity into it—a thing that is easily done by the free use of the word welfare—and you have killed the very spirit that you are trying to create and to cause to grow. Charity develops paupers. Paupers never work, but want some one to bring them their breakfast on a tray and to sit beside them while they moan over eating it. That is, charity begets self pity; self pity kills manhood; and loss of manhood leaves a worthless body behind. So, we must have cooperation rather than charity.

To present this matter concretely, two experiments which are in progress in two parts of the Blue Ridge Mountains are worthy of careful study.

It is a matter of common knowledge that the so-called "mountain whites" of the Blue Ridge are the direct descendants of what we call the "best stock" in the world. That is, they are the descendants of the English, the Scotch, the Welsh, the Irish and the French who came to this country to participate in the Revolutionary

War. The "early settlers" retired into those hills where, in the early days, they gained a reasonably easy living—but a mere living—by hunting and fishing. Although their language has degenerated into colloquialism, it retains in essence many of the refinements of a higher order of living. Their code of life is essentially that of a distinctively higher order of civilization. Although these people are now living in dire poverty and lead what might be called a hopeless existence, no better background could be found for such work of a constructive nature. The seed of progress was planted generations and even centuries ago. The soil, apparently, is fertile. One must conclude that if the effort fails, the thing proceeds on a wrong premise.

In this case, the method of procedure has been for the "welfare workers" to go into the more prosperous communities to beg money and to take it there and spend it.

Because the money comes from others and because the effort is made by others, the movement is wholly from without the community. The people themselves take no part in it; they get merely the results of the labors of others without any need to express individual initiative. The people have themselves done nothing; they have no pride of achievement. The results invariably are two:

First—The "welfare work" has a most superficial effect; communities so built slide back into old ways instantly they are neglected.

Second—Where it produces any lasting effect, the result is a decrease rather than an increase of self-respect.

The movement is well-meaning in the extreme. Those who are conducting it are animated by the highest of purposes. But the results of a great labor of love and of human sympathy are decidedly of doubtful value because of the sour taste which accompanies an act of charity.

A little further north in the same mountains, another situation of distinctively a different kind is witnessed. And the moving spirits are working with entirely different material. In those mountains are enormous deposits of coal—some of the best coals in the world. Enterprising operators have gone there to build their coal-mining plants. Having in the vicinity no available supply of labor, they have carried their workers in with them. In getting these workers, they have combed the world for men who would be interested in that kind of an adventure. The population presents accordingly a conglomerate mass. Perhaps the dominant characteristic is supplied by the people from the Balkan states—immigrants who came with no money, no knowledge of our language, no possible conception of our traditions and not even sprung from the prevailing American "stock." They are decidedly raw recruits for American civilization.

The coal operators, in this case, maintain a personal relationship with their employees. They have instilled into the minds of their men the idea that operator and miner are alike, pioneers in a new territory; that they are building a new industry and a new community; and, they are, together, creating in a wilderness conditions under which life can be lived pleasantly and profitably. The struggle is the same, however, as that further south, namely, to get better houses, better living conditions, better community spirit, better schools, hospitals, churches, better opportunities for children to play, to improve their health and their strength, and better opportunities for them to make of themselves better citizens.

The effect of this cooperative effort is not to leave the slightest suggestion of charity. On the contrary, it

inspires the notion that this is a community movement to a community goal, in that everyone must do his part and contribute in some way to both the expense and the result.

As a consequence, in West Virginia the progress is amazingly rapid; the communities and their institutions, when established, are permanent. They have become parts of the lives of people and are insisted upon by the people as an exact expression of what they themselves have come to be.

If you compare the two results and then go back to the motives which animated each, you must come to but one conclusion:

The only effective method is that which inspires the cooperation of the beneficiaries and produces a result which they look upon as part of their own handiwork.

THE MINNESOTA OCCUPATION TAX

THE DECISION of the Supreme Court holding valid the Minnesota ore tax closes a chapter in the history of mine taxation in that state; but it does not by any means complete the record. It is believed that the repeal of the so-called occupation tax law in the near future is not an improbability, not alone because it imposes an unjust discrimination upon the mines of the state, but also because in the long run it will be found prejudicial to the best interests and welfare of the people of Minnesota.

The Minnesota iron ore tax was passed after more than a decade of agitation and political maneuvering on the part of an element whose attitude toward private property was confiscatory and under whose leadership the so-called Non-Partisan League finally became a dominating factor in Minnesota polities. This element preyed upon the credulity of the voters of the state until the enactment of a super-tax on a minority class of taxpayers seemed proper, notwithstanding the unfair treatment thereby sanctioned by law.

Without doubt many of the voters of Minnesota who supported the proponents of the ore tax were misled by false arguments and misrepresentations. Nevertheless, there is hope that sound business judgment and the principle of square dealing ultimately will prevail. The exuberance of the ore tax advocates over the Court's decision is very great, and probably will encourage agitation for a similar tax on other occupations, business pursuits, and industries besides mining.

If the same tax should be applied to the "occupations" of raising potatoes, growing grain, dairying, logging, and producing other raw products, so that those engaged in such "occupations" would be forced to pay a high super-tax to the state in addition to general property and personal taxes, the resulting wail and protest very soon would force the legislature to reject such a principle of taxation which singles out particular classes and saddles upon them discriminatory burdens.

Other states, particularly those having large undeveloped iron deposits, will not be slow to recognize the opportunity afforded to encourage the development of their mineral resources with capital which normally would find its way to the iron mining industry of Minnesota. Other states, where radicalism finds no sympathetic lodgment, will find added incentive for the adoption or retention of tax measures which operate in their administration fairly and without prejudice for the best interests of all concerned.

THE SUPREME COURT AND JINGOISM

VICIOUS ATTACKS upon the Supreme Court of the United States are made from time to time by individuals or groups who have a peculiar propaganda to foist upon an unsuspecting public. Such attacks are popular with those who seek power or notoriety or who have felt the strong arm of the law in their nefarious pursuits. The recent attempts to create public sentiment in favor of limitations on the power of the Supreme Court have been especially malicious. Alleging that the Court is under capitalistic control, and that its Chief Justice is biased by private interests, political jingoists recently have succeeded in getting what they desired more than anything else—publicity—notwithstanding the fact that their charges and criticisms were not supported by evidence that would merit a moment's consideration.

Following a bitter denunciation of the Court at a labor convention in Cincinnati last year, strikers became unusually active in committing acts of depredation and destruction on railroad and mining properties. Disregard of law and disrespect for courts were prevalent among the unreasoning followers of radicalism. For a time mob violence seemed to be gaining headway throughout the country. Then the Herrin massacre, the abandonment of trains on the desert, the crippling of freight cars and locomotives, the interference with commerce, and other acts of sabotage and violence aroused public opinion to a degree which secured for the Government whole-hearted cooperation from right-thinking people in the enforcement of law and order, and order was soon restored.

Attacks which seek to undermine public confidence in the Supreme Court are attacks upon the Constitution. The proposed limitations of the Court's powers, particularly that which would give Congress the power to declare a legislative act valid after the Court declared it unconstitutional, would open the way for legislative oppression. The checks and balances which the wise founders of the United States Government wove into the Constitution cannot be tampered with or weakened without jeopardizing the well-being of the government and the constitutional guarantees under which the people enjoy liberties and privileges not granted to the citizens of any other country in the world under other forms of government.

THE MILWAUKEE CONVENTION

THE PROBLEM of labor in all of its aspects and the discussions of practical equipment problems will be two distinctive features of the annual Convention and Exposition of Mines and Mine Equipment of the American Mining Congress to be held in Milwaukee.

At the present time the Exposition arena floor is already well filled—80 representative concerns have contracted for space, and it is anticipated on the basis of the present success that there will be 150 extremely interesting displays of mine equipment in Milwaukee by September.

The Twenty-sixth Annual Convention and Exposition bids fair to be the largest and most notable gathering of mining men which has ever been held, and as a result of the cooperative effort of the delegates in attendance policies should be inaugurated as a result of the Milwaukee meeting which will do much to bring about permanent industrial peace and real stabilization of the mining industry.

METAL MINING PROPERTIES TO BE REVALUED

New Internal Revenue Bureau Rules Restrict Discretionary Range of Natural Resources Division—Administrative Regulations Approved Fixing Levies For 1919 and Subsequent Years

IT IS UNDERSTOOD that the Natural Resources Division has been instructed by the Commissioner of Internal Revenue to proceed with the revaluation of metal mining properties for the purpose of determining tax liability for 1919 and subsequent years under the following recommendations formulated by the Income Tax Unit:

(1) That a standard basis for the determination of expected future sales prices of the common metals be adopted. That the arithmetical average price for the ten years preceding the basic date be adopted as the expected future sales price, except in the case of metals for which such an average price is not available or for which the price trend during the ten-year period is strongly and consistently up or down.

LONG-LIFE PROPERTIES

(2) That in the case of valuations of long-life properties, based upon operating records and upon fully developed ore reserves, the present minimum risk rates of 6 per cent for lessors, 7 per cent for operating owners and 8 per cent for lessees are reasonable, but that relatively higher risk rates, according to the peculiar conditions of each case, be used:

(a) In the case of mines in which the ore reserves are not fully developed.

(b) In the case of mines for which the cost of operating must be estimated.

(c) In the case of mines in which the indicated life is less than ten years.

(d) In the case of discovery values of short-life mines during the war period whose value is largely dependent upon war conditions.

(e) In the case of mines subject to interruptions of operations for any reason.

(f) In the case of mines or mineral deposits in which the profit to be realized depends to any extent upon manufacturing or marketing ability or upon any factor other than the intrinsic value of the mineral product.

(3) That the basis of all valuations, except short-life discoveries in war times, be the expected profit as determined by pre-war costs and metal prices, rather than the expected profit as determined by costs attained and expected future prices as influenced by war conditions.

(4) That all valuations by analytic appraisal methods, based upon estimates of any factors, such as operating costs, grade of ore, quantity of ore or increased rates of production, be provisional until actual operations by the

taxpayer have demonstrated the essential accuracy of his estimates; in other words, that information derived from operations subsequent to the required basic date will be the test of the accuracy of analytic valuations which must be based upon estimates.

(5) That in the case of a valuation of any mining or mineral property in which the period required for the exhaustion of the ore or mineral exceeds the life of plant or equipment utilized in its exploitation, provision shall be made in the valuation for deduction from the value of operating profit, at the date of valuation, of the value at that date of the entire amount which is expected to be returned in depreciation during the exhaustion period.

MINIMUM INTEREST RATE

(6) That a 10 per cent interest rate is the minimum rate at which the expected profit from untried mines should be discounted to present worth or cash value.

(7) That if a "price trend" method is used, "cost trends," "interest rate trends" and other trends should be considered in the valuations. Increasing prices represent depreciating money value, and are accompanied by corresponding increases in costs of production and interest rates. Increasing prices should not be considered as any indication of increased profits or of increased values, unless the general price-trend of commodities and wages is increased at a far less rapid rate.

That such gross errors in provisional valuations, as follow, be corrected:

(8) Increasing the recovered metal content per ton without increased cost per ton, adding 50 to 100 per cent to estimated operating profit per ton.

(9) Using a production cost per pound of copper attained in past operations mining a high grade ore, and using the same cost per pound as the expected future cost with much lower grade ore, adding 25 to 90 per cent to the estimated operating profit per ton.

(10) Assuming that the grade of the ore would remain constant when a long period of operations had shown that the assay value of the ore was constantly decreasing and might be expected to do so in the future.

(11) Increasing the estimated present worth of the same total profit by assuming large additions to plant capacity with decreased production costs attending increased capacity, and then assuming an

average rate of production and an average cost for the entire life of the property.

NO REPLACEMENT PROVISION

(12) Making no provision for plant replacement when the useful life of the plant is less than the life of the mine.

(13) Accepting erroneous estimates of the taxpayer without check or correction.

(14) Allowing depletion deductions for ore of such low value that it was profitable only in war times, and was not included in the valuation. Thus, in one instance, a ton of low-profit ore is excluded to each two tons of high-profit ore included in the computation of value. The ore excluded must be removed to permit mining of the commercial ore, and, if the price of copper is such that it can be profitably treated, the ore is shipped to the mill instead of the dump.

Perhaps a profit of 25 cents per ton is made and depletion of 50 cents per ton allowed for this ore. Using a portion of the plant capacity for treating this ore has also a direct effect upon the value of the commercial ore, in that it reduces the plant capacity available for the commercial ore and reduces the present value of that ore.

NATURAL RESOURCES CHIEF IS APPOINTED

SAMUEL M. GREENIDGE, formerly acting chief of the oil and gas section, natural resources division, Bureau of Internal Revenue, has been appointed to succeed Albert H. Fay as chief of the division. Mr. Fay recently was promoted to membership on the Committee on Appeals and Review.

TO COORDINATE WORK

BUREAU CHIEFS of the Interior Department have organized a committee to coordinate the various activities of the department.

This committee is composed of the chiefs and directors of the various bureaus, who will join together in a program of merging and cooperating some of the functions performed by the Interior Department.

A number of officials from the Post Office service and the War Department with long experience in reorganizing governmental activities have been assigned to assist in this coordination through courtesy of the War and Post Office Departments.

INDUSTRIAL COOPERATION MEETING IS MARKER

New York Conference, Held Under Auspices of Newly Created Division of American Mining Congress, Brings Leaders of Mining Industry Together in Determination to Rout Industrial Friction--Necessary Action Analyzed

THE CONFERENCE of leaders of the mining industry held in New York, April 27, under the auspices of the Division of Industrial Cooperation of the American Mining Congress, is being carried by its potential results into a place of high interest and importance in industrial history. At this meeting, men representing the largest mining operations in the country gathered to discuss ways and means for the practical carrying out of the platform, adopted by approximately 10,000 mining men, which is calculated to increase harmony in the relations between employers and employees.

Any such campaign must necessarily be stretched over an appreciable length of time, for the creation of confidence, the basis of harmony, cannot be accomplished in a day. The course will be covered step by step, with almost a total absence of flash in progress. In the light of these conditions, those who are engaged in the movement have entered into a steady discerning and constant effort, realizing at the outset that only through a broadcasting of facts and the establishment of intimate contacts can the

harmony striven for become a reality.

The New York conference, called by Sidney J. Jennings, president of the American Mining Congress, was not the first move in the campaign, resolutions authorizing organization of the Division of Industrial Cooperation having been passed at the Cleveland convention of the American Mining Congress, with the organization work progressing since that time.

But the meeting did bring forth the first volume of impetus behind the movement. By thorough discussions and analysis of experiences a strength of thought was developed, with a marked purpose as its immediate and lasting reaction.

The conference adopted a resolution that clearly and concisely expressed the practical ideality of the movement, car-

sounded the keynote by declaring "that the interest of labor, capital and management are identical up to the point of production. Those three interests are desirous, and it is essential to their welfare that production should be great; otherwise, there is nothing to divide."

Following statements by several of the industrial leaders, officials of the American Mining Congress and others, a resolution was adopted creating a committee on ways and means to carry out the expressed purposes of the conference. Announcement of the personnel of this committee soon will be made.

Throughout the entire discussion was the thought that facts must be broad-

casted steadily and without stint if an understanding is to be promoted as a basis upon which

the harmony being sought by the movement may stand.

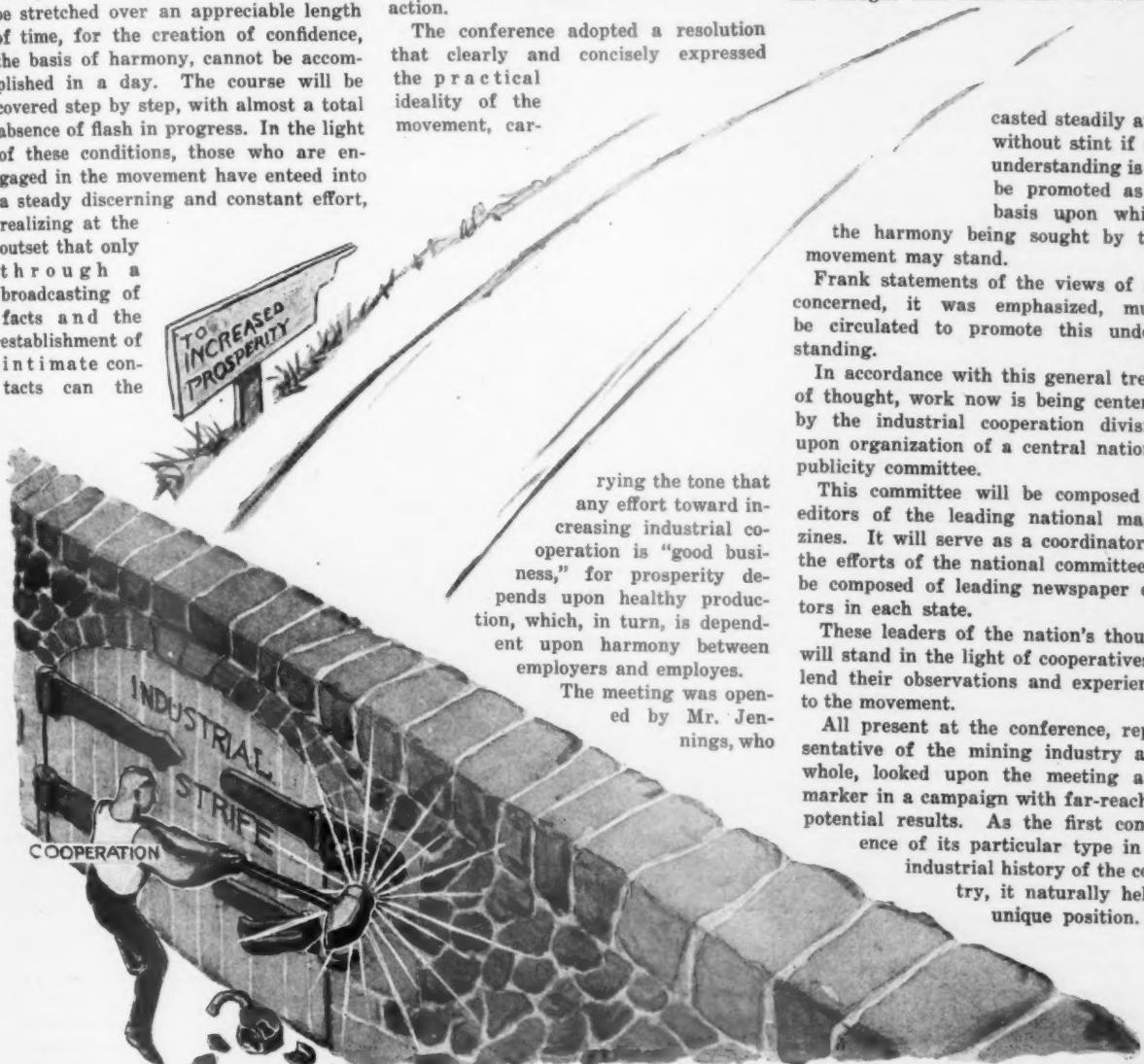
Frank statements of the views of all concerned, it was emphasized, must be circulated to promote this understanding.

In accordance with this general trend of thought, work now is being centered by the industrial cooperation division upon organization of a central national publicity committee.

This committee will be composed of editors of the leading national magazines. It will serve as a coordinator of the efforts of the national committee to be composed of leading newspaper editors in each state.

These leaders of the nation's thought will stand in the light of cooperatives to lend their observations and experiences to the movement.

All present at the conference, representative of the mining industry as a whole, looked upon the meeting as a marker in a campaign with far-reaching potential results. As the first conference of its particular type in the industrial history of the country, it naturally held a unique position.



THE DIVISION OF INDUSTRIAL COOPERATION

Newly Organized Agency of the American Mining Congress is Pledged to Most Constructive Service That Can Be Rendered to the Mining Industry Through Its Representative Body—Emphasizes Presence of Mutual Obligations

By E. R. COOMBES
American Mining Congress Staff

THE RELATIONSHIP between employers and employees is not only primarily a human problem, but has grown to such proportions that it is of the greatest import to every one of the one hundred and ten million citizens of the United States. The Twentieth Century is essentially an era of big business. Production, particularly in the mining industry, is conducted upon a large scale. Great corporations employ thousands of men. With the employment of this large number of workmen it has been impossible to maintain the close personal contact that is possible in a smaller enterprise. With the elimination of personal contact between employer and employee, there has arisen a fog of misunderstanding that is well nigh impenetrable. Through this fog, however, gradually growing more distinct, is the bright sun of understanding; a realization of mutual interdependence, and the recognition of the sound policy of "rights for all and privileges for none." But employers and employees have moved slowly in their progress toward that ultimate goal—industrial peace.

OF PRIME IMPORTANCE

With full credit to the other and varied activities of the American Mining Congress, it may be safely said that no other work is of greater importance than that which it has initiated through its Division of Industrial Cooperation. A more satisfactory relation between employer and employee is its purpose. Its committees representing coal, metals and allied industries already are organized in twenty-four states.

Two annual conventions have endorsed the work and the industry, as a whole, has adopted the following resolution endorsing the division.

WHEREAS, The average prices paid for labor and all other commodities are regulated by the law of supply and demand; and

WHEREAS, The best service is always given by those interested in their work, and whose aim is to bring about the

Resolution Adopted by the

INDUSTRIAL COOPERATION CONFERENCE

New York City, April 27

WHEREAS industrial peace will be brought about only through confidence between the management and employee;

WHEREAS industrial peace is vital to the preservation of our present-day civilization and the welfare of our country;

WHEREAS the energies of both organized employees and organized employers should be diverted from controversy to working and harmonious means of practical cooperation;

WHEREAS the public is interested and benefited by continuous employment and operation of productive enterprises;

WHEREAS President Harding, in a message to Congress, August 19, 1922, declared: "It is fundamental to freedom that all men have unquestioned rights to lawful pursuits, to work, and to live and choose their own lawful ways to happiness," most forcefully voices our viewpoint; therefore, be it

RESOLVED, That the Division of Industrial Cooperation of the American Mining Congress as now organized and as planned for future development furnishes a common ground upon which employer and employee may meet for the consideration of problems of employment which affect them both; and, be it further

RESOLVED, That we, representing the coal, metal and oil industries, assembled at the Industrial Cooperation Conference, New York City, April 27, pledge our full and hearty support in the establishment of ways and means for making the work of this Division complete and effective to the end that we may have industrial peace in the mining industry.

largest possible production; and

WHEREAS, All wages must in the end be derived from the selling price of the commodity to which labor is applied; and

WHEREAS, There has arisen a marked tendency, in recent years, augmented by

war conditions, to decrease the service rendered both through shorter hours and the suggestion that the full manpower of the nation shall not be applied to continuous production through a fear of economic idleness; and

WHEREAS, The larger the production in all lines and the greater the competition in all markets, the lower the price will be to the consumer, and the greater amount of commodities will be available to the wage earner whose wages will have greater purchasing power because of the competition developed by full production; and

WHEREAS, Efficient production is accomplished only through complete cooperation between employer and employee; and

WHEREAS, Many of the various plans for industrial cooperation now in operation have brought larger man production, better wages, higher purchasing power for such wages, and at the same time stabilized the business of the employer and

WHEREAS, It is desirable that such relations may be established between all employers and employees as will bring about the greatest efficiency and the most complete happiness and contentment that the best living conditions may be obtainable and that the aspirations of workmen and employers may be realized without resort to strikes and lockouts; therefore be it

Resolved, That the Division of Industrial Cooperation which has been organized by the American Mining Congress has the full endorsement and approval and that the American Mining Congress through the Board of Directors be directed to further the general plan by all means within its power; and be it further

Resolved, That employers and employees throughout the country be urged to cooperate in a general movement which shall have for its ultimate accomplishment harmonious relations, continuous employment, fair wages, reasonable profits and the cheapest priced commodities to the consumer which these conditions will permit. Ac-

cording to the latest figures available by the United States Bureau of Census, there are 21,280 actively producing mining enterprises in the United States. These companies have an investment of \$7,103,823,496. They employ more than a million men. There are twenty-six states whose basic output is the product of the mines. Fifty-eight percent of the total tonnage hauled by our railroads, is

public reliable and intelligent facts concerning what the mining industry is doing for its employees, not from the standpoint of paternalism, for the division does not believe that paternalism has any part in industrial cooperation, but from the standpoint of the opportunities that mining companies are giving in the way of education and opportunities for the children of our miners to grow into

can Mining Congress has come the very able president of that worthy institution, the Cowey Mountain School of North Carolina. Dr. Allen, through his humanitarian work and through his school, has done a wonderful thing for the mountain children of the districts referred to. His school has taken the little, hopeless, snuff-chewing, underfed children of the mountaineer and has given

BEFORE and AFTER



The marked influence of environment upon children is acknowledged. This fact places high importance upon civic improvements wrought by leaders of the coal industry in the Blue Ridge Mountains of West Virginia. At the left are shown a mountaineer's children in the thoroughly negative environment of a typical cabin home. On the right, dozens of children of this type are shown at play, after coal operations had brought a school into their midst.

mine products. The railroads employ an additional million and a half men, a large percentage of whom are retained by the railroads for the sole purpose of handling the tonnages furnished by the mines.

It therefore is immediately apparent that the mines must be kept working, if we are to have labor fully employed, and the nation freed from economic loss and unnecessary hardship.

Labor constitutes approximately 80 percent of the cost of all commodities in the hands of the ultimate consumer. American living standards, ideals, and freedom, of which we are all justly proud, require a high standard of wages. The public is in sympathy with the company that gives to its employes the opportunity to become, themselves, employers—and every strike that interferes with production, every disturbance which grows out of labor troubles, all interference with production, resulting either directly or indirectly from dissatisfaction of employes, make necessary an additional charge to the consumer.

Industrial cooperation is insurance against strikes. It is good business. It will help to promote contented workmen, increased production, reduced costs and a satisfied public.

The Division of Industrial Cooperation is organized primarily to present to the

strong, capable, helpful citizens of the United States.

The mining industry probably is the most misunderstood industry of the nation. Why? Because it has been content to go its way, fighting its battles individually instead of collectively, disdaining to reply to the attacks made against it, refusing to defend itself against preposterous charges, while those who are advocating the nationalization of our industries are flooding the public with misinformation and propaganda, even attacking the integrity of an industry that has done as much if not more for its workingmen than any other industry in the world.

A MEANS OF COMPARISON

Working conditions in Mingo and Logan counties, West Virginia, have been a conspicuous target for the severest attack from this propaganda. They have been pictured in the blackest terms. As a matter of fact, if you have taken or will take the trouble to travel through the rural districts of West Virginia or North Carolina, Tennessee, Kentucky or Virginia, that have not benefited by the marvelous opportunities afforded the inhabitants of mining communities, and will compare these non-mining localities with the mining districts, little criticism will be forthcoming.

Every year to the office of the Ameri-

to them an opportunity, through public charity, to better their conditions.

Compare that worthy enterprise with the work that is being done by mine operators for the children of their employes in the mining regions of West Virginia and particularly in Mingo and Logan counties. The mining companies have brought to these children the finest of public school facilities, playgrounds, libraries, sanitary conditions, hospitalization, concrete instead of mud roads, excellent housing facilities and a real opportunity for self development. The children of these miners are given opportunities that are not available even to children who are supposedly more fortunately located in the non-mining districts of America. What the mine operators of West Virginia have done and are doing for their employes and their children is being repeated all over the United States in every mining district, great and small.

QUESTIONNAIRE IS CIRCULATED

The Division of Industrial Cooperation has sent out a questionnaire to every operating mining company—to each of the 21,280 actively mining enterprises. A preliminary report will be compiled and presented to the 26th Annual Convention of the American Mining Congress to be held at Milwaukee, Wis., September 24-29, 1923, which will paint a

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word picture that will be surprising even to the members of the mining fraternity who are more or less familiar with what the industry is doing to promote Americanism among our foreign born population and what is being done to give young Americans a real opportunity, through their own efforts, to make worth-while citizens of themselves.

There is no other large industry that is doing greater work for the promotion of better citizenship than the mining industry. But mine operators are not self-advertisers. They have been content to do their work, knowing that they are rendering a great service. They will continue to build wonderful plants and to give wonderful opportunities, such as are available at the Colorado Fuel and Iron Company's property, the Phelps Dodge Company's Burro Mountain plant at Tyrone, N. M., the Raleigh-Wyoming Company's new camp at Charleston, W. Va., the J. G. Bradley properties at Dundon, W. Va., and Josiah Keeley Cabin Creek Consolidated Coal Company's properties at Kayford, W. Va., the Oliver Iron Company's properties in Minnesota, the Oglesby, Norton Company's industrial plan, the Tennessee Copper Company's work in Tennessee—only to mention a few of the very conspicuous enterprises.

FACTS ON ONLY ONE SIDE

In the nation's capital, admittedly the best informed center of the world, with every facility available to its high school and college students, in every debate of the year upon nationalization of industries, the affirmative side won hands down. There is available to the students in practically every large university and public high school in America tons of literature put out by the organized minorities advocating the placing of our mines and our railroads under the direct management of the workers through political influence.

The article in the March 28 issue of the *Outlook*, by C. J. Golden, of the United Mine Workers of America, quite clearly outlines the position of the few extremists who are determined to undermine the high principles that have made America possible.

The following quotation from this article, advocating nationalization of the mines, is interesting:

"Yes, the first year the miners' wages might be reduced, seeing the kind of representatives you've got here now in the government. But not the second year. The workers would soon learn not to vote for men who reduced them. When the representatives' political fates depended on it, we'd get fair conditions from them."

Mr. Golden admits that possibly for the first year of nationalization of the mines the workers would be compelled to take less wages, but only for the first year—or until their political machine can be organized to put men in our national Congress who will grant them more and more wages to be paid out of the taxes for the up-keep of the government paid by the people as a whole.

Such statements sound their own

the blessings of liberty to ourselves and our posterity, do ordain and establish this CONSTITUTION for the United States of America."

Mining companies are making it possible for these foreign born workmen to know and to understand just what the freedom of our forefathers means. The great work of Americanization goes on year in and year out through the mining companies and this work has only just begun. We cannot hope to bring immigrant labor from Europe, put them into our clean, fine atmosphere, after the depression and the sordidness of Europe, and expect them immediately to understand our ways or to appreciate their freedom. They must be taught what that freedom cost our forefathers; they must be taught reverence for the Constitution of the United States and for the American flag.

RECOGNITION OF PRINCIPLES

Through all the combative arguments of both sides of any industrial dispute—arguments that have become involved and lost in the "thou shalt not" and the "there ought to be a law passed"—a simple reversal to the Constitution of the United States and a recognition of its just principles by both sides would be one of the most helpful things in the solution of industrial unrest.

President Harding said in his speech at Marion, Ohio, on July 4, 1922: "Liberty is gone in America when any man is denied by anybody the right of work and the right to live by that work. A free American has the right to labor without any other's leave."

The Division of Industrial Cooperation agrees with Mr. Harding. The large proportion of the hundred and ten million people of this nation agree with Mr. Harding. The subject of industrial unrest is one that is commanding nationwide attention. This attention is being crystallized and has been crystallized by the congressional attitude. It is interesting to know that of the twenty-odd thousand bills that were introduced in the House and Senate during the Sixty-seventh Congress more than 300 were directly or indirectly proposed for the distinct purpose of ending industrial strife. The people are appealing to the political factions to remedy a thing that cannot be remedied by legislation. Legislation will not solve the problem. It will never be solved until both capital and labor realize their interdependence and their mutual obligation.

The Division of Industrial Cooperation is pledged to the most constructive and intelligent service that the representatives of the mining industry can give. Its platform—endorsed by over 10,000 mining men—is printed elsewhere in this issue.

UNITY OF INTERESTS IS OUTLINED

IN OPENING the industrial cooperation conference, held in New York City, April 27, Sidney J. Jennings, president, American Mining Congress, outlined the basics of the plan for eliminating friction from relationships between employers and employees. Mr. Jennings said, in part:

"The idea that animates the people who are interested in industrial cooperation seems to me to be this: that the interests of the labor, capital and management are identical up to the point of production. Those three interests are desirous, and it is essential to their welfare that production should be great; otherwise, there is nothing to divide.

"Where the interests of those three tend to separate is when it comes to dividing result of that production, and the people who are interested in this movement of cooperation in industry believe that some fair, equitable means can be devised by the leaders of industry by which that division can take place so as to satisfy the just, legitimate demands of all those interested."

death-knell—nor do they for a moment represent the attitude of intelligent labor, either organized or unorganized.

But something of the problem of the operator may be understood when we realize that 58 percent of the men employed in our iron and steel industry are foreign born; 62 percent of the men employed in the coal industry are foreign born; 59 percent of the men employed in the metal industry are foreign born; and 57 percent of the labor employed in the oil fields is foreign born; men who neither understand nor read the English language, men to whom the Constitution of the United States is only a name, and who do not know or understand the principles laid down in that simple statement—The Preamble to our Constitution:

"We, the people of the United States, in order to form a more perfect Union, establish justice, insure domestic tranquillity, provide for the common defense, promote the general welfare, and secure

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THE CAPITOL DOME

This mighty mass, fashioned in the strength
of the nation, is a chide to all things petty.

TAKING STEPS TOWARD PEACE IN INDUSTRY

Written for *The Mining Congress Journal*

By JAMES J. DAVIS
Secretary of Labor

WE LIVE in an extraordinary age. We are just learning the full value of the words Organization and Cooperation. We are approaching the day when labor shall be really free, when industry shall be really unshackled. The day of master and man is gone in American industry. I hope that with that unhappy time will disappear the period of discord and strife in American industrial life, and that we shall enter upon an era of intelligent cooperation based on mutual interests, mutual good-will and mutual understanding between the worker and the employer. Many forces in this country are today working toward this end, as day after day we demonstrate the futility of fratricidal conflict between those who manage industry and those whose labor makes industry possible.

Employers and workers everywhere are learning that they stand no longer in the relation of master and servant as in ages past, but that they are coworkers, partners, whose joint and mutual interests march side by side. They are coming to know that the prosperity of industry depends upon production, and that industrial warfare is the greatest enemy of production. To end industrial warfare we need understanding and cooperation between the men who manage industry and the men upon whose labor industry is founded. The greatest prosperity, for employer and employed, will be found in that industry where the employer knows intimately the problems and needs and aspirations of the workers, and where the workers have a sympathetic understanding of the difficulties and discouragements and purposes of the employer. Many of our present day industrial difficulties were unknown in the days when industry, organized on a small scale, permitted closer personal relations between the man who managed industry and the men who worked in it. The successful surmounting of these difficulties lies in developing some system

whereby that close personal relationship may be restored or some adequate substitute found for it.

We are gradually learning in America that employer and employe must stand or fall together; that one cannot long prosper at the expense of the other.

organizations have provided the best experts that are known in their particular lines to furnish necessary information and statistics to the representatives of the organization who deal with management. Their experience has demonstrated the wisdom of providing the representatives

of the workers with full and complete data as to their industry. We can do much by bettering the facilities of the workers for securing all information as to the problems of management as well as to their own problems.

When men meet with the management they should meet on equal terms. The representatives of the men should know the problems which confront the management, the problems of finance, of sales, of markets, of raw materials.

The trade union principle is fundamentally sound, but, like every other great human institution, it has its faults, and it can be abused. Not many men in industry today are quarreling with the trade

union principle. But some of the abuses have stirred many men in the management of industry against it.

One evil that has crept into our trade union system is the jurisdictional dispute. I honestly believe that the jurisdictional dispute has done more injury to the cause of organized labor in the United States than any other single thing. The spectacle of workers employing the strike weapon against their own fellows is a reflection upon our whole civilization. It is in violation of the whole spirit of trade unionism, and it has done much to discredit the trade union principle in the minds of many employers. The jurisdictional dispute is the spectre which has frightened the management of many industries. The jurisdictional dispute must go, if trade unionism is to fulfill its high purpose in our industrial life.

I would have trade organizations foster a spirit of loyalty, of loyalty to fellow workers, to craft, to industry and to employer. We have long since left behind the fallacy that machinery tends

*"I AM not one of those who believe that you can force industrial peace into being by legal enactment. ***The remedy lies not in governmental interference between the employer and the employe, but in direct negotiation and mutual understanding."*

—Secretary Davis



Both must gain. If one loses, both must lose. If one dies, both must die. I have a firm belief that we can establish the era of good will in American industry. We are ready to take two long strides in that direction. We must place at the disposal of the workers accurate scientific information as to the problems, conditions and purposes which confront the employers. We must see to it that the employers are made thoroughly familiar with the aims, objects and difficulties which lie before the workers. We must make sure that when workers and employers get together to arrange wages and conditions of employment, both sides are in possession not only of all the facts that bear upon the matters before them but that each side has an appreciation of the point of view of the other. When we reach this point the way will be clear to eternal peace in industry.

I know something of the weaknesses and something of the strength of trade unionism in America. Some trade orga-

to displace workers. We know that every machine aids the worker by increasing his productive power, and we seek to encourage new machines. I would have our trade organizations foster the spirit of inventive genius among our workers, and I would provide the means to insure that every worker who by his ingenuity succeeds in eliminating waste, increasing output, or reducing costs is enabled to reap the full reward for his effort.

CAN NOT BE FORCED

I am not one of those who believe that you can force industrial peace into being, by legal enactment. We hear much talk nowadays of compulsory arbitration of labor disputes in one form or another, but the principle does not appeal to me. I have studied the matter diligently, and the information that comes to me shows that wherever compulsory arbitration has been tried it has proved a failure. Strikes and lockouts have been with us in the past, are with us today, and will be with us so long as employers seek to impose unbearable conditions upon workers or workers endeavor to obtain more from industry than they are entitled to. The remedy lies not in governmental interference between the employer and the employe, but in direct negotiation and mutual understanding.

I am not one of those who look upon the government official as a special pleader for any individual or group. I believe that every official of the federal government, by virtue of his oath of office, owes his whole duty to the whole American people and not to any class, group or bloc. The Department of Labor, for instance, was organized to promote the welfare of the wage earner, but I am firm in the conviction that the welfare of the wage earner cannot be promoted unless the welfare of the wage payer is also advanced. In industry we cannot promote one side alone.

Let us be slow to use the strike weapon.

A TRAGEDY IN EACH STRIKE

I know the evils and the misery of the strike, out of my own experience as a worker, and through the continuous stream of industrial disputes which flows through my office in the Department of Labor. The tragedy of every strike, it seems to me, is that, ultimately, it is settled by negotiation or compromise. After men have been idle for months, after women and children have been brought down to the last crust of bread, the representatives of both sides get together around the council table and reach a settlement. They go right back to where they were when the months of misery began, and in almost every case both worker and employer have lost by reason of the conflict. Instead of conference after months of industrial battle, I would have counsel before the strike

is called. In my capacity as Secretary of Labor I try to discourage strikes and exert every influence to get management and men who are in disagreement together on some common ground of compromise. I would save those loyal women who in every worker's home, while the strike is on, spend days and nights in agony, depriving themselves and their little ones of the necessities of life, that the breadwinner may be fed. Let us remember that the process of evolution is always going on, and that eventually the whole loaf will be forthcoming. Seldom, indeed, is the whole loaf won in a strike. It is far better to reach a compromise before a strike is called, and eliminate the cost that must be paid for every suspension of industry. Let us remember that the best way to raise wages is to cut waste and increase production. When the employer advances, the workers advance. When the company succeeds, the workers succeed.

REFLECTED IN WAGES

Increased production, better quality of work means reduced manufacturing costs, which every wise employer will see to it are reflected in higher wages. Do not wait for times of trouble to get together with your employer. When business is prosperous is the time for workers and management to get together and work out plans for stabilizing conditions in their industry, to devise ways and means of meeting periods of depression which are bound to come. Men and management in industry, working with a clear understanding of each other's problems, and seated around the council table can solve their own unemployment problems better than any government agency can solve them.

THE MAN TO SUPPORT

It appears to me that the man who forges ahead is the man we ought to support. The man who, by his initiative, by his enterprise, by his courage, steps out to develop new industry, to expand business, to extend the opportunities for employment, is the man we ought to aid. The idea that just because a man happens to have money he ought to be condemned is dangerous. Let us look at what he does with his money, with results he gets for himself and his fellow men. To my mind there is no difference between the idler who sits back and enjoys inherited wealth and the idler who sits sleepily on a park bench and watches the world go by. Neither is advancing the cause of humanity. Neither is adding to the sum total of human happiness. The man whose wants are small has done little to develop America, to forward civilization. It is the man who wants many things, and who works to get them, that helps himself and his fellows, for every satisfied want means work for some one.

If it had not been for the men with initiative, the men with wants and with the energy to satisfy those wants, America would today still be a wilderness inhabited by the aboriginal Indians. American citizens would still be living in hovels, clad in a breech clout and a string of beads. The pioneer in business today is the counterpart of the man who fought the Indians one hundred and fifty years ago. He is working not for himself alone but for society. This is the man who deserves sympathetic support. He is hardly getting it in America today. Our tax system seems designed to hamper and discourage the business builder, the man who would expand industry. At present we have put an almost prohibitive tax on the man who puts his money into productive enterprise, and we have allowed a loophole in tax-exempt securities of political subdivisions which puts a premium on idle wealth. The subject is a broad one, but from the worker's point of view it seems clear to me that we should reform our tax system, to encourage the man who puts his money to work, and to discourage the man who merely enjoys the returns from his wealth.

A DEBT OF DUTY

But the man who seeks to build up productive industry owes a duty to the workers who make his enterprise possible. Enlightened employers believe their men are entitled to something more than a mere living wage, something better than a mere existence. They are seeing the wisdom of what I call the saving wage, the wage that will give the earner a little more than just enough to pay his bills on Saturday night, that will enable him and his family to enjoy some of the good things of life, and to provide for the time when he will no longer be able to earn. They are coming to the view of President Harding, who has said:

"The workman's lowest wage must be enough for comfort, enough to make his house a home, enough to insure that the struggle for existence shall not crowd out the things worth existing for."

We are on our way to better times in America. Everywhere the spirit of humanity is grasping the fundamental wisdom of the principles of cooperation and organization. Everywhere mankind is coming closer to the ideal for which it has struggled down through the centuries, the ideal of the brotherhood of man. The spirit of universal fraternity, which through all time has been one of the great forces behind every forward movement of the human race, is daily growing in strength. We are growing more tolerant of the weakness of our fellows, more appreciative of their strength. We are reaching out for that "mystic bond of brotherhood" which the great Carlyle said "makes all men one."

THE PRACTICE OF INDUSTRIAL COOPERATION

Basic Principles Reflected in Relationship of United Verde Copper Company With its Employes—Fact that Cooperation Implies Joint Effort is Emphasized—Intimacy of Direct Contact Brings Valuable Results

By H. DEWITT SMITH

Mine Superintendent, United Verde Copper Company, Jerome, Arizona

THE SUBJECT of industrial cooperation immediately brings to mind employes' representation, pension systems, profit sharing, sick benefit associations and all manner of welfare work.

The employer's first question in attacking this problem is usually, "What can I do for my employes?" After applying every method in the text book, and having granted his workmen more than they even asked or wanted, he wonders at his indifferent success and the lack of enthusiasm aroused. He has failed to recognize the fact that cooperation implies joint effort by two parties, and that his employes can gain lasting material benefits for themselves only as the results of their own efforts.

It is because of failure to recognize this principle that the labor unions of the present day have so lamentably failed to make the most of their opportunities. The labor unions came into being to combat the oppression of organized capital, a condition which was a natural outgrowth of our modern competitive system. They have been successful in forcing a complete change in business administration. But the labor union is at present so constituted that it can see nothing to be gained except higher wages, shorter hours and limitation of individual productivity. When the time comes, as it will, that organized labor demands and obtains the best efforts of each of its members for their employers, and an increasing individual efficiency, then it will gain prompt recognition and enthusiastic cooperation from the employer of labor. The labor union can gain real strength in the future only by placing its shoulder behind the ball of industrial cooperation, together with the employer and employee.

That working conditions should be as safe, healthful and attractive as it is possible to make them has long been accepted as an axiom by successful business men, but unless such workman takes

a keen and vital interest in his work, the physical surroundings will have little more value than the setting of a stage without its actors. This interest can best be secured in two ways: 1. By close personal contact with the men who direct his operations and; 2. By methods

back to normal through sympathy and consideration. This method of direct contact is to obtain the same general results with a force of two thousand men as were obtained by personal supervision in the small factory of yesterday.

This first step naturally leads to the second—that each boss and his workman makes a committee of two to settle any grievance that arises. Where the gang boss and any man or men under his direction cannot reach an agreement, the shift boss is brought into the discussion. In case of failure to reach an agreement then, the mine foreman, superintendent and general manager are successively brought into the conference. In the past three years, the only cases appealed to the general manager have been those of old-time or former employes who were not willing to do a fair day's work, and who thought

that their acquaintance with him in the days when he was a timberman with them would gain them greater consideration.

The employment agent of the company is usually an interested observer in these conferences, and assists the bosses in arriving at a just decision. Matters involving increase of wages in any occupation are taken up directly with the foreman and superintendent. The knowledge that every executive of the company encourages the presentation of grievances, and thanks the employes for such presentation, has become firmly established in the minds of employes, and removes the natural hesitancy in presenting their cases.

NOT AN ELABORATE PLAN

This procedure, with its intimate personal contact between employer and employe, has obviated the necessity of any elaborate plan of employe representation. The latter, where modeled after our national form of government, is apt to develop the same weakness in business administration that Congress has so clearly and definitely shown in recent years.



A DIAMOND IN THE ROUGH

The Jerome Baseball Park was built up by the fill of 475,000 cubic yards from steam shovel operations of the United Verde Copper Company.

of payment directly proportional to the results of each individual's efforts.

THE FIRST ESSENTIAL

At the properties of the United Verde Copper Company, the first essential for superintendents, foremen, shift bosses and gang bosses is to know their men. In spite of the apparent simplicity of this requirement, it is a matter of years of constant training to develop men with the ability to direct the work efficiently and the personality to gain and maintain the confidence of the men under their direction. Every man, be he manager or shoveler, prefers to be greeted by his name, rather than with a "Hey, you over there!" Consequently, the foremen, shift bosses and gang bosses learn the given names of their workmen, call them by name, and in addition learn their troubles and their aspirations as far as possible. This is not done as a matter of curiosity, but because each boss is genuinely interested in his men as fellow men. Then when a man's work falls below par as the result of sickness or trouble at home, his boss, instead of upbraiding him, can help bring his work

There is the definite danger that politics will invade this form of local self-government and develop the same waste of time, lack of vision and inefficiency that is characteristic of state legislatures and municipal governments. It must be borne definitely in mind by companies which have given their employees certain rights of representation, and yet have withheld any definite powers through control of the supervisory or bosses' group and the veto power, that they may later be forced to relinquish this power as their employes acquire the taste for definite control of their own destinies. The republican form of government has many advantages, but it also has its disadvantages where its voters are not all of the highest order of intelligence.

Even though friction is entirely eliminated between employer and employee, no spirit of cooperation can exist unless both are vitally interested in the results of effort expended. The payment of a fair wage for a fair day's work is of course the first consideration. The second and more important consideration is the paying of additional wages in contract, piece work or bonus form for work in excess of a standard day's work. Only by analysis of each man's work can his interest be aroused and his latent productive power brought into service. The amount of time each employee can save for himself and his company is incredible until a fair piece work system is evolved, and results tabulated.

WORKING AT TOP SPEED

The varied and original nature of the repair work handled by mine mechanical shops presents as difficult a job for fair estimation as can be imagined. The cost of installing a bonus system for work of this nature is great, and the expenditure of thought considerably greater. Such a system was instituted in the mechanical shops of the United Verde Copper Company, at both mine and smelter; a year ago without definite hopes of successful solution except on the part of the general manager. Today the lathes cannot turn fast enough to complete one job that the next bonus job may be undertaken. Suggestions for improved routing of work and quicker methods of setting up in rapid-fire procession keep the master mechanic and his assistants hustling to keep one pace ahead of their men. The union organizer will find more difficulty with the passing of each year in gaining a foothold in these shops where his motto is: "A minimum amount of work based upon the ability of the least efficient."

When a boilermaker brags to his companion of the number of rivets he has driven the past shift, and the motorman of the number of cars handled, you may rest assured that the shift has passed quickly for each man, and that he will

find little time for agitation about the "oppression of capital." Instead of such agitation, both will probably force "capital" to furnish them better equipment for increased production, of which they will take the best of care.

Whenever such cooperation is obtained on the job, cooperation toward improvement in social and living conditions follows as a natural consequence. The Phelps Dodge Corporation and the Calumet and Arizona Mining Company, in the Bisbee-Warren District, have developed

FACTS HOLD POWER

"It seems to me that, following the experience of some public utilities, well circulated impartial information, resulting in public discussion and general education of the public as to all phases of the mining industry should eventually place it on a sounder, more satisfactory basis than it now has, and in that way benefit both employer and employee."—J. S. Lutes, General Manager, the Tod-Stambaugh Co., Duluth, Minn.

a plan for home-owning to a far greater extent than in any other mining district in the Southwest. This effort will pay large dividends in reduced turnover in the face of the impending labor shortage in the mining industry. That the mining companies are alive to the value of educational facilities is evident from the fact that in 1922 Arizona was awarded first place in the national school efficiency rating. The encouragement of club activities controlled entirely by employes, school and town athletics, gardens and swimming pools is the aim of every farsighted mining company in Arizona. The Ford car has been one of the greatest helps in making mining towns livable by permitting whole families to get out into hills each week end, and to get away from the job.

If a man is contended with his working conditions, and if joint efforts are made to maintain reasonable living, educational and social conditions, he and his family will be found pulling a lusty oar in the boat of Industrial Cooperation. He must be occasionally reminded, however, that a fair day's work goes hand in hand with a fair day's wage and fair treatment.

With "Justice and a fair deal for all" as their watchword, employer and employe are well started on the road to industrial democracy, better wages, better profits, and contentment.

HARMONY DEMANDS CLOSE CONTACTS

C ONFIDENCE is the keynote of harmony in industrial relations, declared W. A. Grieves, Jeffrey Manufacturing Company, Columbus, Ohio, chairman, Division of Industrial Cooperation of the American Mining Congress, in addressing the New York conference. Admitting that this thought may be a platitude, Mr. Grieves stated that it is, however, "as strong as the first day it was stated."

MUST RESPECT FUNDAMENTALS

Continuing, he said: "After all, we must not get away from these fundamentals. We can go off in the bypaths of new schemes but always we must observe a few fundamentals, a few common sense ideas and a few common sense methods. These we find are all that are necessary to work out and change conditions that will make satisfactory industrial relationship possible."

"I know a great many ideas prevail about how this great question of industrial relations is going to be solved. To me it has never taken on the aspect of a problem for a solution as much as it has appeared to be the aspect of a condition, a condition differing entirely in the various places where the problems so-called are to be worked out. I don't think we can lay down any plan or any method as a universal means for obtaining industrial cooperation.

"I remember twenty years ago when we started in at our own plant to do some things we thought ought to be done, I said we would probably get started in ten years. That is about what we have done. We have a good start. We have a confidence created that can't be shaken. We don't say that with egotism but it is the result of hard work and getting together.

"There is no reason why the mining industry can't. It may be a more difficult task because it is more heterogeneous.

THE NECESSARY ACTION

"I feel if we, through the Industrial Relations Division of the Congress, can gather together in a boiled-down report the things that are being done, the results that have been secured, eliminating all superfluous stuff, all sentimental stuff, all this fanatical idealism, get the real practical relationship with which men can succeed in dealing with each other, we will have made a great step towards the goal that is so fundamental in industry, as the thing we ought to strive to attain."

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DIVISION OF INDUSTRIAL COOPERATION THE AMERICAN MINING CONGRESS

PLATFORM

We Believe That

INDUSTRIAL cooperation between employer and employee is good business.

Equitable compensation and good working conditions are essentially fundamental.

Paternalism in industry leads to the "Something-for-Nothing" spirit, which is the very foundation of I. W. W. ism.

Industrial peace will be brought about only through confidence in management, and that that confidence can be secured only through a closer personal touch between management and employees.

Satisfied employees are the best investment any company can make, and mean millions of dollars to the mining industry.

Future peace of industry will not be found in "organized employers" and "organized employees" that are created to fight each other. This has been tried for half a century and failed.

There is a common ground upon which every employer and employee can meet, and that this common ground is born of confidence, and sustained through a recognition of interdependence.

The mining industry needs the regenerating influence of reciprocal relations between employer and employee. There is no other road to permanent industrial peace.

Our Purpose

THE American Mining Congress is the "Common Denominator"—the non-partisan ground, the clearing house, for problems inherent to mining.

It is vitally interested in any agency that will assist in bringing about better industrial relations.

Public estimate of any industry is largely determined by the harmony, or discord, between management and employee, and the public is almost invariably in sympathy with the man who labors.

There are many phases of mining that the public has never heard about that would go a long way in helping reach a proper estimate of industrial affairs in the industry. The public still believes the working man is downtrodden, crushed beneath the heel of a "soulless" corporation, or imperialistic capitalism.

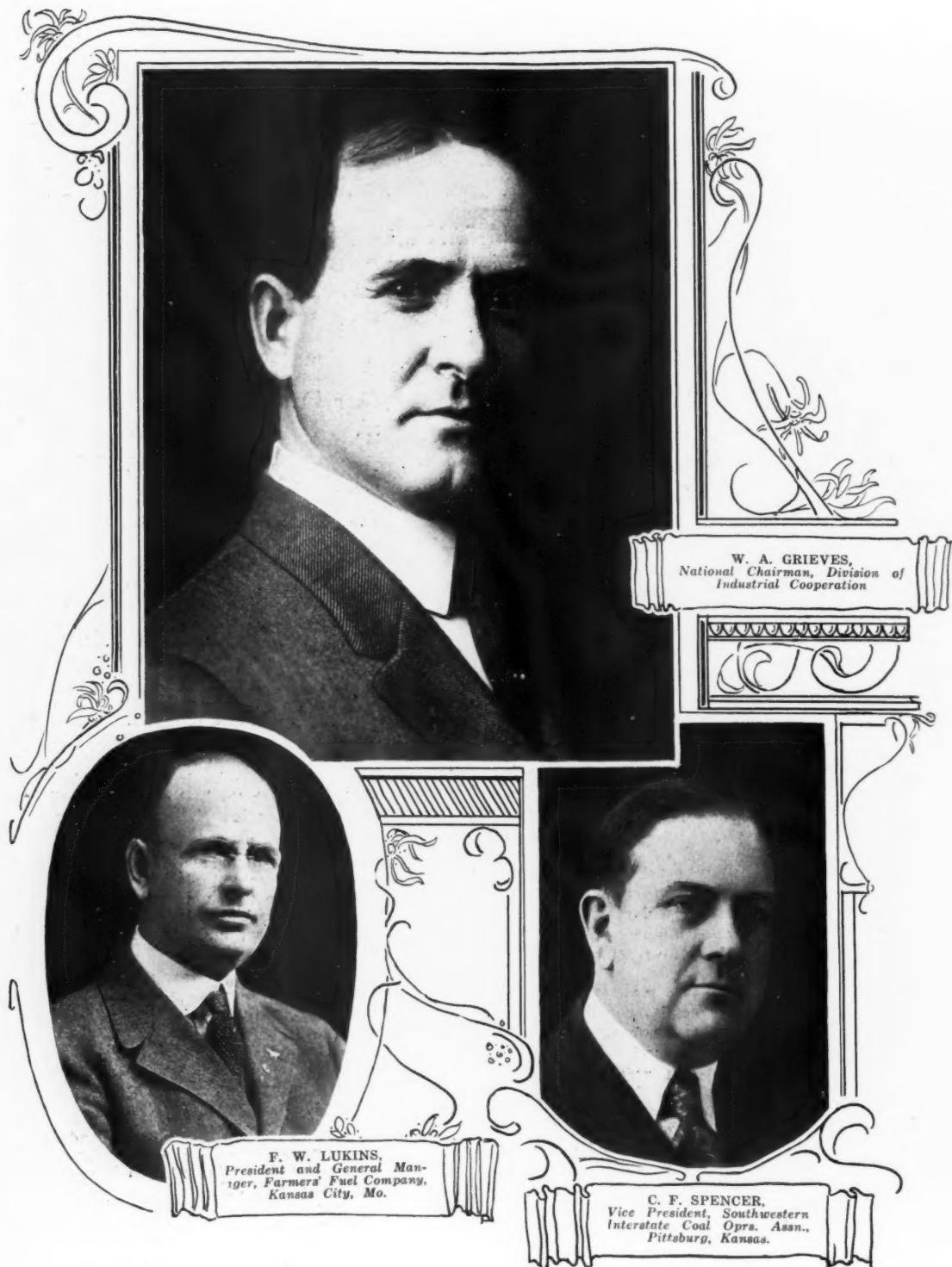
When such calamities as the Herrin massacre can occur and fail to arouse the thinking people to decisive action, it is time that a fair, unbiased committee investigate working conditions in the mining industry, and give the public facts.

We propose to make this investigation for the industry. To make a survey of the various forms of so-called "welfare" obtaining in both the coal and metal industries; to investigate the possibilities of the various systems, and to disseminate the information widely, to the public generally.

We do not propose to make recommendations. We shall merely be the agency through which the information is gathered and distributed.

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W. A. GRIEVES,
National Chairman, Division of
Industrial Cooperation

F. W. LUKINS,
President and General Manager,
Farmers' Fuel Company,
Kansas City, Mo.

C. F. SPENCER,
Vice President, Southwestern
Interstate Coal Ops. Assn.,
Pittsburg, Kansas.

CHAIRMEN, DIVISION OF INDUSTRIAL COOPERATION
AMERICAN MINING CONGRESS

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GEO. A. STAHL,
Metals Exploration Co., Denver, Colo.



H. L. YOUNG,
Amer. Zinc, Lead & Smelting Co., Mascot, Tenn.



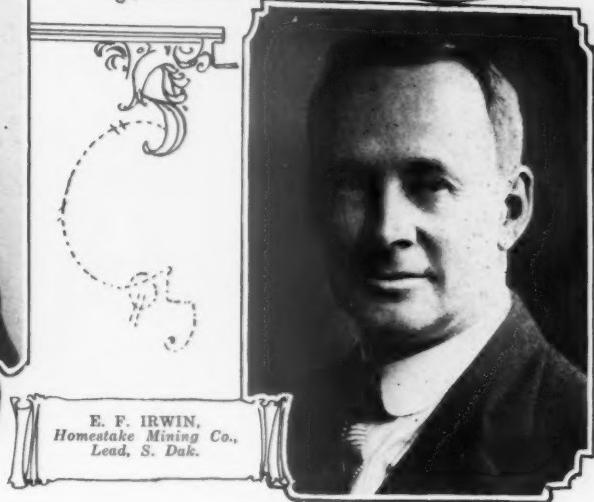
H. DEWITT SMITH,
United Verde Copper Co., Jerome, Arizona



EMMET D. BOYLE,
Nevada State Journal, Reno, Nev.

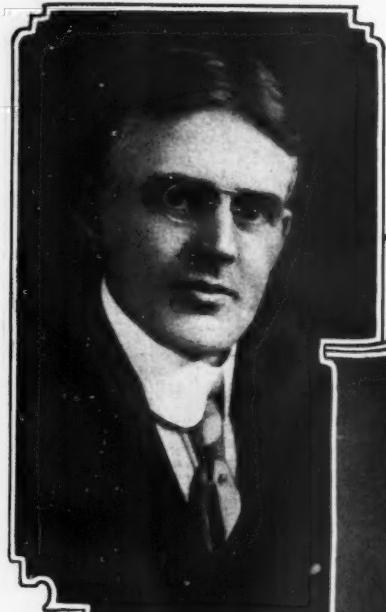


MURRAY SCHICK,
Minerals Expl'n Co., Salt Lake City



E. F. IRWIN,
Homestake Mining Co., Lead, S. Dak.

CHAIRMEN, METAL MINING BRANCH,
DIVISION OF INDUSTRIAL COOPERATION



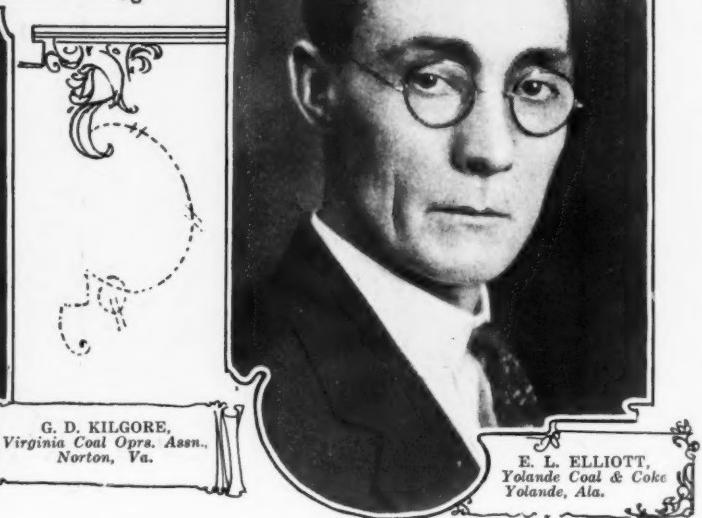
GEO. A. VAN DYKE,
Sterling-Midland Coal Co.
Indianapolis Ind.



E. S. BROOKS,
Union Pacific Coal Co., Rock
Springs, Wyo.



A. H. LICHTY,
Colorado Fuel & Iron
Co., Denver, Colo.



G. D. KILGORE,
Virginia Coal Ops. Assn.,
Norton, Va.

E. L. ELLIOTT,
Yolande Coal & Coke
Yolande, Ala.

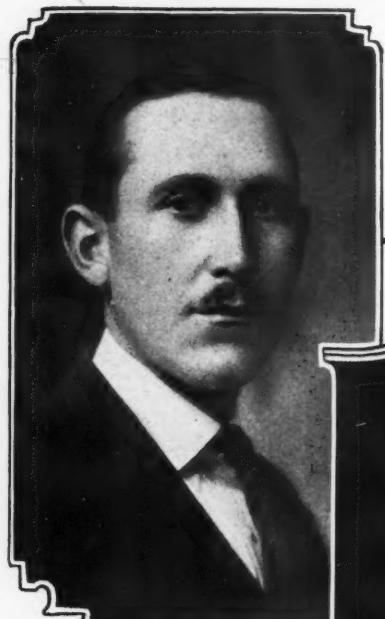
CHAIRMEN, COAL MINING BRANCH,
DIVISION OF INDUSTRIAL COOPERATION

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MEMBERS, METAL MINING BRANCH,
DIVISION OF INDUSTRIAL COOPERATION

MEMBERS, COAL AND METAL MINING BRANCHES,
DIVISION OF INDUSTRIAL COOPERATION



FREDERICK L. PEART,
Rocky Mountain Fuel Co., Den-
ver, Colorado



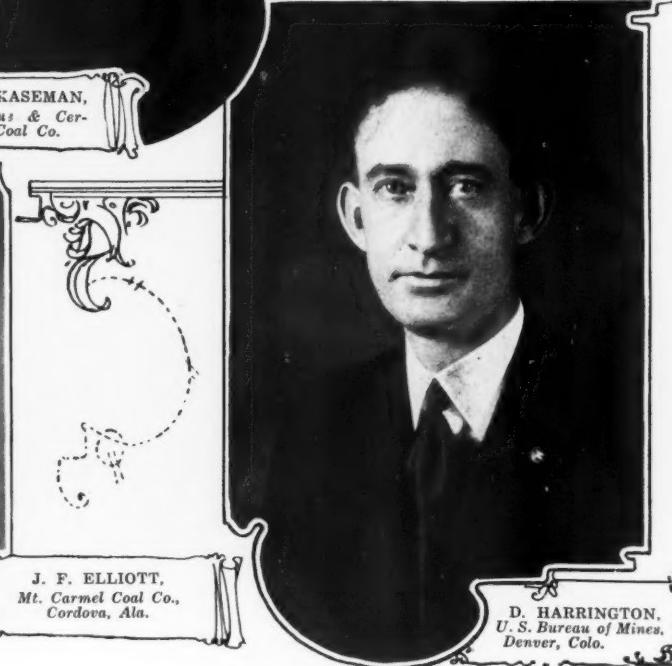
LEE LONG,
Clinchfield Coal Corporation,
Dante, Va.



GEO A. KASEMAN,
Albuquerque & Cer-
rillos Coal Co.



J. F. ELLIOTT,
Mt. Carmel Coal Co.,
Cordova, Ala.



D. HARRINGTON,
U. S. Bureau of Mines,
Denver, Colo.

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C. F. RICHARDSON,
West Kentucky Coal Co., Stur-
gia, Ky.



EVERETT DRENNEN,
W. Va., Coal & Coke Co.,
Elkins, W. Va.



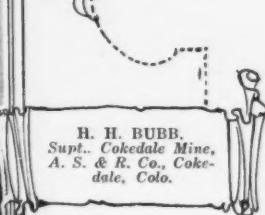
R. P. MALONEY,
Davis Coal & Coke Co.,
Cumberland, Md.



C. H. JENKINS,
Hutchinson Coal Co., Fair-
mont, W. Va.



ROBT. GRANT
New Eng. F. &
T. Co., Boston



H. H. BUBB,
Supt., Cokedale Mine,
A. S. & R. Co., Coke-
dale, Colo.

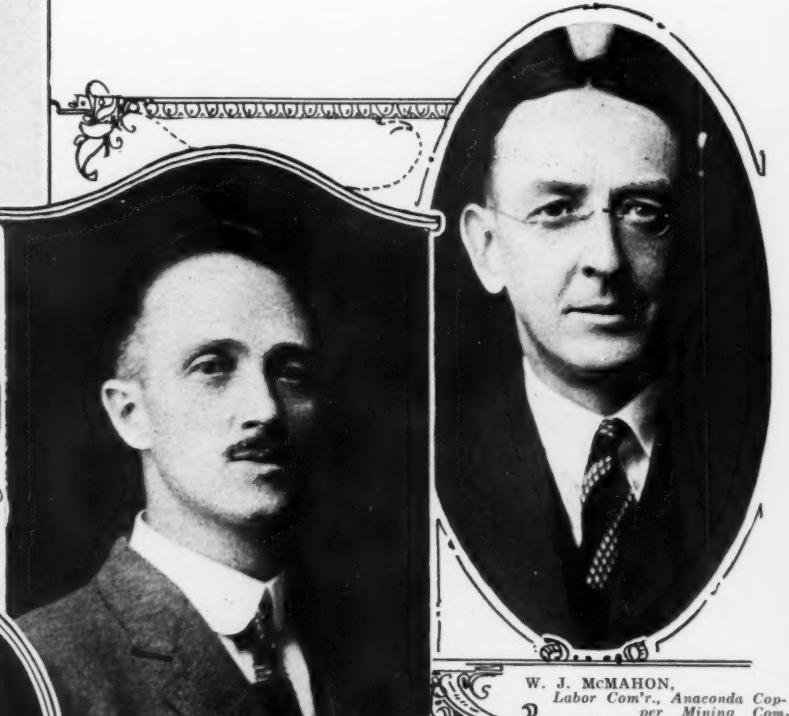
MEMBERS, COAL MINING BRANCH,
DIVISION OF INDUSTRIAL COOPERATION



R. G. LUCAS,
Utah Copper Company, Salt Lake
City, Utah



R. MCGILLIVRAY,
W. A. Clark Inter-
ests, Butte, Mont.



W. J. McMAHON,
Labor Com'r., Anaconda Cop-
per Mining Com-
pany, Butte, Mont.

JOHN L. BOARDMAN,
Chairman, Montana Anaconda
Copper Co., Butte, Mont.



O. A. DINGMAN,
East Butte Copper Co.
Butte, Mont.

PERSONNEL, METAL MINING
BRANCH, DIVISION OF INDUS-
TRIAL COOPERATION

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INDUSTRIAL RELATIONS IN BITUMINOUS MINING

BY CARL SCHOLZ, Vice President and General Manager, Raleigh-Wyoming Coal Co., Charleston, W. Va.

INDUSTRY is an amalgamation of capital and labor, just as cement and sand make concrete; the strength of the material depends upon the judicious and proper mixture of the ingredients. Neither is of any particular use without the other. Capital needs the labor to use and convert the materials which it can buy and labor needs the capital so it may sell its service. Our civilization, yes, our very existence, depends upon this process and the living standards of nations are measured by the number of conditions which they create, and, at the same time, require.

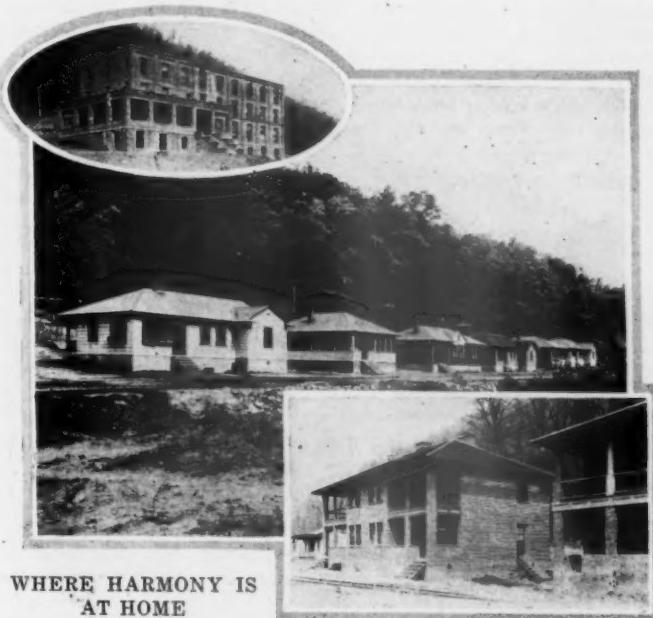
If we, for a moment, turn back five hundred years in the history of our country we will find that we had very few producers. The squaw and the warrior created their own requirements. They had no need for the tailor, dressmaker, or milliner; a few skins answered their needs for clothing, a pony and drag provided their needs of transportation; the woods provided their fuel, and the game of the forest and the fish from the stream provided their food, and, as described in Robinson Crusoe, it was an ideal life, but which one of us today would care to revert to it? There were no movies, newspapers, seaside excursions or fancy clothing, but, with the coming of the white man, the temptation of firewater and firearms gradually created conditions, and the game which could not be reached by bow and arrow was brought down by the long-range rifle imported by civilization, and thus the complications of civilization started, and have been growing steadily since. The individual trapper became a member of a trading company and employed other help; the cowboy express became the railroad of today, and the camp of tepees developed into cities with stores and factories; the individual became a specialist who could only do one thing and depended upon many others to furnish his wants, and thus the condition of capital and labor came into existence; greed stalked in and at times capital oppressed labor and

again labor did not wish always to go the way capital willed, and gradually lockouts, strikes, riots, and bloodshed came into existence where peace and co-operation should have dwelled, and warring, instead of being carried on between nations, developed into civil war.

ing his actions, depending upon the viewpoint of his client.

Great ingenuity and skill has been developed by representatives of the various factions. Temporary gains have been scored, first by one side then the other, and we have had financial depressions and financial feasts. Wars among other nations have temporarily benefited our industries, but the law of average reduced the peaks and deep valleys had to be crossed. From a number of small organizations of craftsmen large labor unions were formed, and now labor stands on one side arraigned for battle against the captains of industries on the other side. Imagine what success an army would have if every man would want to be a general and there were no privates. Perhaps Russia is a shining example of what we call the present-day civilization.

As I see it, the foundation of a successful nation is based upon the four cardinal virtues; loyalty to one's family, loyalty to the employer or employee, as the case may be; loyalty to the country and loyalty to one's God. The positions may be reversed, according to the individual viewpoint, but the elimina-



WHERE HARMONY IS AT HOME

The camp of the Raleigh-Wyoming Coal Company, Glen Rogers, West Virginia, is a striking example of the engendering of community interest among those who are drawn together in the operation of a coal mine. The center photo shows a group of typical residences at Glen Rogers. In the oval is pictured "The Inn," where are furnished the most complete and modern accommodations, and below are shown the four-family apartments.

It seems superfluous to take these matters up, and yet such has been our history, and, since there has been so much needless strife, it seems our duty to see how these matters can be corrected. Capital itself is inert and has no power unless it is used. Labor, generally speaking, is a willing worker, but it likewise is misled and abused. The growing desire to dominate rather than to cooperate and help has undoubtedly been the worst undoing of the human race. Politics have played a strong hand and many abuses can be traced back to the want for power. In the early history of our government representatives were sent to Washington to use their best judgment; the clients at home knew little of the doings of their representatives, but today each vote and speech is flashed over the country and before the Congressman returns to his hotel he finds telegrams commenting or condemn-

tion of any one of the four is sure to be followed by needless loss. An unbiased viewpoint of the conditions in the coal industry, which has been so prominently brought before the public eye, would indicate that the leaders of the bituminous miners have seriously invaded upon one or several of these fundamentals. The cunning displayed by the leaders has incited surprise and indignation of our thinking classes; it has appealed to the sensational press and misled well-intentioned but uninformed parties and the courts of our country are clogged with proceedings involving an enormous cost in both money and time. To correct this evil and insist upon fair treatment of workers, employers, and consumers alike is a matter now engaging the attention of many public bodies. Let us hope that with the opportunities of the greatest age we will be successful and in this sense develop real industrial relations.

INJECTION OF SPIRIT INTO A MINING CAMP

Community Problems Loom Higher Than in Other Branches of Industry—Stability of a Camp Gauged by Attractiveness—Labor Turn-Over is Minimized and Gains Made Accordingly

By E. M. SAWYER

Manager, Burro Mountain Branch, Phelps Dodge Corporation, Tyrone, New Mexico

IN THE DEVELOPMENT of a new mining enterprise, particularly one that necessitates comparatively large scale operations, the various community problems are often more urgent than is the case in most other lines of industry. The location for a manufacturing plant may be selected with reference to transportation facilities, proximity of markets or where an adequate labor supply is already available and its promoters do not necessarily have to concern themselves at the start with questions of housing, recreational life or other affairs of its employes. The mining plant, on the other hand, is of necessity located where the ore occurrence has been discovered and when this happens to be in an unpopulated section of the country, remote from any other industrial development, the undertaking will involve housing and welfare problems which must be dealt with concurrently with those of a more technical nature which bear directly on methods of mining and treatment of the ore.

This was the situation which confronted the Burro Mountain Branch of Phelps Dodge Corporation in planning its operations at Tyrone, New Mexico, and the present town of Tyrone is the result of this company's endeavors to provide accommodations and desirable living conditions for its employes and their families, constituting a community of between three and four thousand inhabitants.

Nearly the entire area suitable for townsitc purposes and within reasonable distance of the mine lay within the boundaries of company property and while this condition placed upon the com-

pany the entire responsibility for townsite development it offered the company a corresponding opportunity to attract and retain the most desirable types of workmen and staff employees by providing comfortable homes with healthy, wholesome surroundings, reasonable living

The district is located in the foothills of the Burro Mountains at an elevation of about 6,000 feet and near the boundary of the Gila National Forest. The picturesque setting for a town in the midst of a succession of low wooded hills offered a rare opportunity to the architect but in contrast to this the engineering problems in connection with the planning and economical construction of roads, water and sewer systems were correspondingly difficult.

The original settlement which grew up during the prospect stage was abandoned on account of lack of room for expansion, difficulties in the way of bringing in a spur from the railroad and because its location in one of the deeper arroyos of the district subjected it to the chance of damage by floods during the summer rainy season. The spot finally chosen for the new townsitc had all the requisites that were lacking in the location of the original town and the additional advantage of sufficient room for a central park or plaza about which the larger and more important buildings could be grouped and which would become a center for all civic and business activities.

The general scheme of the plaza and surrounding buildings and most of the company-built houses was designed by B. G. Goodhue of New York. A uniform architectural style was ad-



Tyrone, New Mexico, presents an outstanding example of the results that follow the building-up of community spirit in mining camps. The largest photograph gives a view of the Plaza at Tyrone during the celebration of 4th of July. At the top is a more general view of the Plaza; below, the schoolhouse is shown.

costs and a congenial civic and social environment.

Although the planning and building up of the town along permanent lines was undertaken as a necessary phase of the business itself rather than as an experiment in philanthropy or paternalism, at the same time there was genuine satisfaction in seeing the camp develop into a community of homes where good feeling and contentment prevailed.

hered to from the beginning, resulting not only in a pleasing effect from an artistic point of view but also in numerous practical advantages and economies gained from standardization on certain methods and materials of construction. The architectural style is characterized by straight lines and broad arches with very little decoration or ornamentation further than the variety of tinted stuccos used on outside walls and an occasional

red tiled roof in the residence section. Permanency and utility were always the objects in view. The principal construction material used was hollow tile, the walls of practically all buildings being of this material.

THE CENTRAL PLAZA

The central plaza is an oval in shape approximately 400 feet long by 200 feet wide, planted with grass and shade trees. On the west side of the plaza are the railroad station, post office and large store building occupied by the Phelps Dodge Mercantile Company. Back of these buildings and served by the same industrial spur from the railroad are the Mercantile Company's warehouse and the central heating plant which furnishes heat for the entire plaza group. On the opposite side of the plaza and facing the store is the general office in which the engineering, geological, townsite and accounting departments are quartered. Below the general office on the northeast corner of the plaza is an independent business block. On the ground floor of this building is the Bank of Tyrone and accommodations for independent places of business occupied by a general mercantile concern, a confectionery and a drug store. On the upper floor is a barber shop, a dentist's office, the Tyrone Public Library and the American Legion rooms.

A number of other business establishments are provided for and given every assistance and encouragement, as it is felt that for the benefit and convenience of the people of the community there should be as much independent trade as the town will support. There is not quite the same business competition as would exist in a town not under the same private control and for this reason the individual business men to whom concessions are given are held responsible for the best possible service to the public. The independent business group give the town an identity and character of its own quite independent of the company which it would not have if the company control were too rigidly exercised. The initiative is taken by this group in a great many public activities and these activities are entered into with more spirit and enthusiasm and carried through more successfully than would be possible if they were started and dominated or influenced too much from the general office.

The schoolhouse is located on Mangas

Street extending north from the plaza but close enough to be regarded as one of the main plaza group and is in fact one of the largest and most expensive buildings in town. It embodies all the

from time to time by visiting clergymen.

The Catholic Church organization occupies the building formerly used by the Phelps Dodge Mercantile Company, this building having been remodelled and renovated for the purpose. This organization also conducts its own affairs, both churches being entirely independent of the company except for the regular monthly contribution.

The only important building given a separate location is the hospital. This is situated on one of the more prominent hills above town and commands a beautiful view of the Mangas Valley stretching to the north and the Mogollon Mountains beyond. It is easily accessible from both the American and Mexican residence sections of

A contentment induced by possession of favorable environments outside the work-a-day life forms a major element of industrial harmony.

latest features of practical schoolhouse design and has been described at various times in superlative terms. This building has nineteen class rooms in addition to laboratories for domestic science and manual training and with the mines in operation has been filled to its utmost capacity. A nominal rental is received from the county for the use of the building, but, as this rental is provided for by special levy on the district in

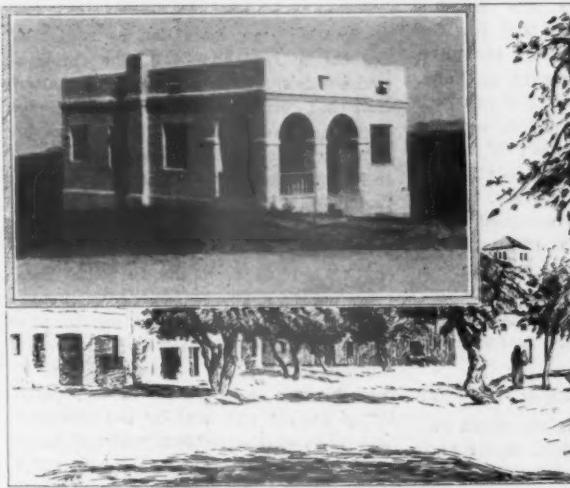
which the company is the only important taxpayer, it amounts practically to a gift from the company to the community. The school is under the jurisdiction of the county superintendent and a local board

elected by the voters of the district.

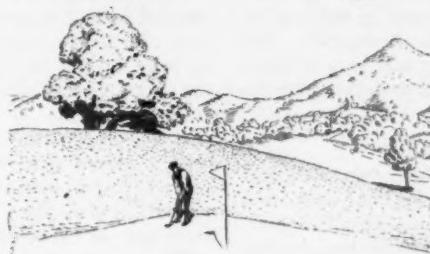
Nearly opposite the schoolhouse is a modest church given over to the uses of an organization known as the Tyrone Union Church, which embraces all denominations of Protestant faith. Church support and interest is thus centralized and the plan has proven to be practical and satisfactory in every way. The organization is governed by a church board elected by the membership and this board chooses its clergymen and arranges for services to be conducted

town and yet somewhat removed for the sake of quietness and seclusion. The hospital has capacity for 36 patients. The building is of fireproof construction and is thoroughly up to date in equipment and facilities. It is conducted according to the customary company hospital plan, the married employees paying a monthly fee of \$2 and the single employees \$1, for which all necessary medical attention and hospital care is furnished to themselves and their families. Collections from employees amount to about half the actual running expenses of the hospital and the balance is contributed by the company. Thus for each dollar paid by an employe he receives approximately double value in hospital service or insurance.

The question of living accommodations for employees was one that above all could not be left to take care of itself but demanded consideration from the start. It was even necessary to provide a number of tin houses as temporary quarters while the construction of the first group of permanent houses was under way. Houses were built of various types and sizes in both the American and Mexican residence sections of town and streets were laid out on which lots were leased to employes who preferred to build for themselves. The company houses are mostly of hollow tile covered with tinted stucco as in the case of the larger buildings on the plaza, with which they harmonize in architectural style. The monotony of repetition which is some-



A TYPICAL TYRONE HOME



times seen in similar housing projects was avoided in this instance by taking advantage of the irregular topography and by alternating single houses and two, three and six family apartments providing accommodations for a total of 245 families. Inasmuch as the housing project was being carried out for the benefit of employees they were consulted freely in advance with regard to plans, arrangement of rooms, etc., and prospective occupants were enabled to express their preferences in matters of detail such as interior tinting and location of light fixtures, closets and shelves. After the first houses had been occupied for a certain length of time a questionnaire was circulated among the tenants for suggestions as to how they could be improved upon and the information obtained was utilized in the planning of subsequent houses.

DETAILS OF HOUSING

All company built houses are wired for electricity and connected with water and sewer mains and these facilities are also extended into nearly all sections of town designated for independently owned houses so that connections are easily made to them. The rent charged for company houses varies from \$6 to \$30 per month. Electricity is paid for according to meter at 7 cents per K. W. H. and for water a flat charge of \$1.50 per month is made, or where a garden is planted, a meter is installed and water paid for at the rate of 50 cents per thousand for the first three thousand gallons and 35 cents per thousand for all in addition. For leased house lots the charge is \$1 per month and the rates for water and electricity are the same as in the company houses.

All street cleaning and the removal of garbage, ashes and rubbish is handled by a sanitary squad and no charge made for this service. This work is thoroughly done and a degree of cleanliness maintained comparable with military standards.

Numerous opportunities for amusement and recreation have been furnished and in this connection the policy has been to encourage initiative on the part of employees and the public and to help along their activities by cooperation and financial support. For several years baseball enthusiasm predominated and the company provided a ball park and grandstand in addition to a regular monthly contribution during the playing season. In a similar manner, four tennis courts, a golf course and a rifle range had their origin so that it became possible for nearly everyone to indulge in his favorite pastime. The plaza itself is one of the most popular places of amusement. At the center of the plaza is a rectangular pavement where dances are held regularly during the summer

months, and it has become customary for all American and Mexican holiday celebrations and public exercises to be held there.

A DECIDED ADVANTAGE

One of the most decided advantages in a company-owned town lies in the extent to which living costs can be controlled for the mutual benefit of the employees and the company itself. The old contention that company stores were conducted for the exploitation of employees is beginning to look absurd and inconsistent in view of the liberal policies being manifested everywhere by large corporations.

In fact, the loudest complaints today are being heard from the competing merchants, arising from the fact that company stores have the advantage in purchasing power and are willing to pass this advantage along to their customers. Rentals are kept at a fair level first by the schedule established on company-owned houses and next by the provision that when an independently-owned house is transferred a corresponding transfer of the lot lease must be made in the company office. This makes it possible to frustrate any attempt on the part of an individual to acquire the ownership of a large number of houses for the purpose of rent profiteering.

In connection with community affairs, it is not the policy of the company to

assume the same authority and control that it has over its mining operations. The town is not a part of the mining plant, and the sphere of an individual as a citizen of the community is entirely separate from his sphere as an employee of the company. The direction of mining operations is based on technical considerations while the direction of community affairs is based on human considerations and the life and activities of the community should reflect the interests and aspirations of its citizens rather than the will of a company management. The object of the company in its relations with the community is to promote such stabilizing influences as pride and responsibility of citizenship and these are not engendered by paternalism.

In the last analysis, the stability of the community will depend on the number of men who choose it as a place in which to live and work, bring up and educate their children or, in other words, on the number of permanent homes established. This will be reflected by the percentage of labor turnover on the company's payrolls from month to month. If the turnover is kept at a low figure, the company will be rewarded for its efforts in behalf of the community by the efficiency of the working force as expressed in units of work done per man-shift.

REPORT ON COAL IS SOON TO BE FRAMED

THE COAL industry's more important recommendations for improving conditions within the coal mining industry probably will not appear in the report to be submitted on July 1, but will be held for inclusion in the final report to be made in September. The earlier report mainly will be a compilation of facts and statistics concerning the industry.

LIGHT IS CAST

As the days pass, however, indications come at intervals to cast light upon what may be expected in the reports. As a result of recent conferences held by the commission with the anthracite operators, it became known that there is a strong possibility the commission will fasten upon reduction of freight rates on hard coal as one means of bringing about lower prices and remedying the general situation.

Also, it is evident that the commission is becoming more and more desirous of seeing negotiations for a new wage agreement in the anthracite industry opened at an early date. The wage question was not discussed with the anthracite operators and observers were wondering if, in the face of this fact, the subject would be taken up with John L.

Lewis, president, United Mine Workers, upon the occasion of his conference with the commission following his return from a survey of Europe's mining conditions

The July report of the commission on the anthracite industry will give an indication as to the justness of contentions on both sides of the controversy in case the operators and miners fail to reach a wage agreement. It is said, however, that the miners and operators do not need a report from the commission in order to begin wage negotiations. The report will show the margin of the operators and the earnings of the miners.

The commission is preparing reports on the cost of mine operation and earnings of miners in union and non-union fields in bituminous and anthracite fields.

MANY BRIEFS FILED

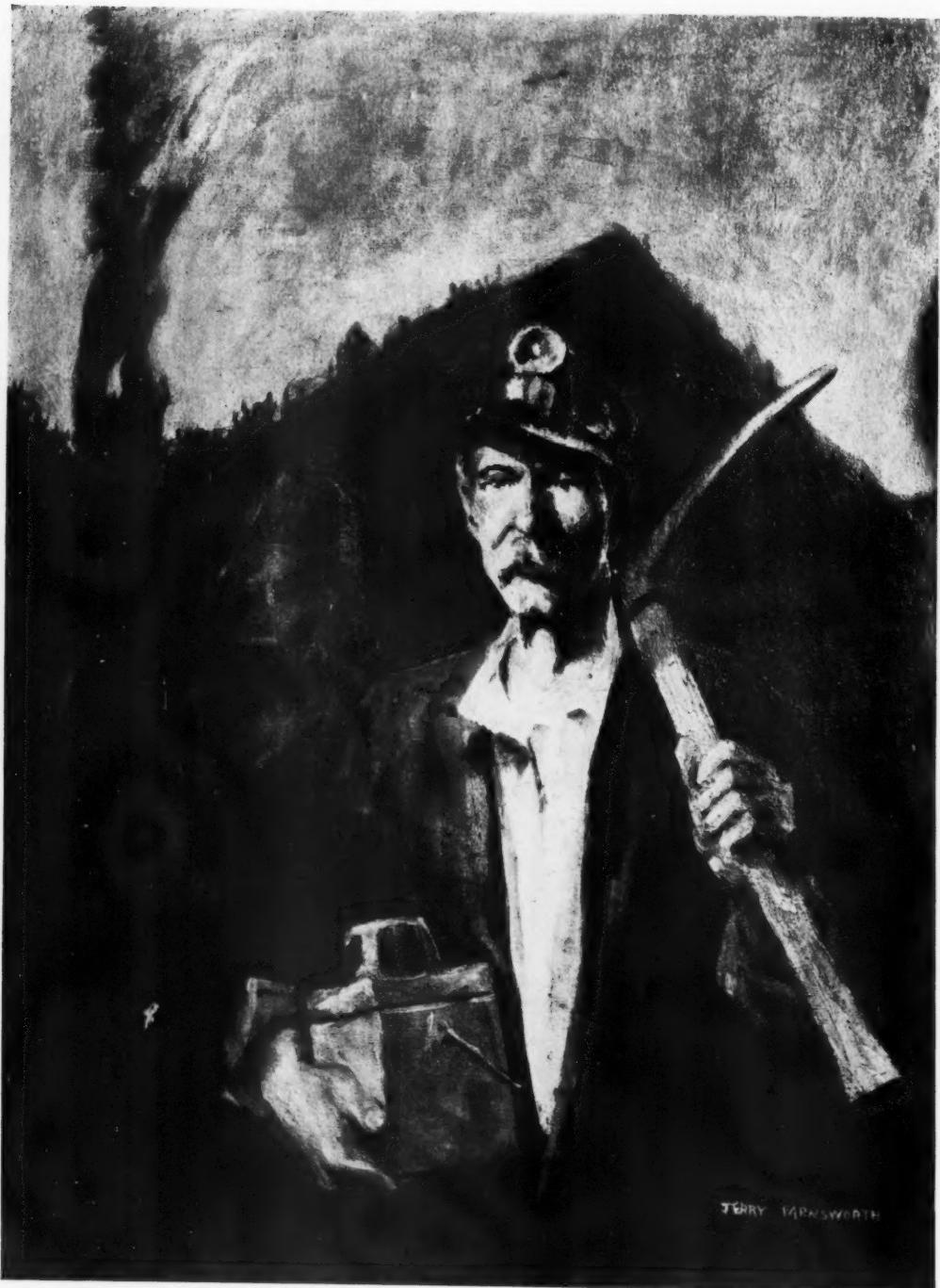
Several briefs recently have been filed with the commission, including three by the bituminous operators and one setting forth the anthracite operators' views on union control. The briefs filed by the bituminous operators covered activities of the United Mine Workers, labor costs in producing bituminous coal, and safety of the coal mining industry as compared with the hazards faced by workmen in 100 other industries.

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—From Painting by Jerry Farnsworth, Reproduced by Courtesy of Nation's Business.

The Miner

TREASURY DEPARTMENT FIRM ON SILVER POLICY

Exchange of Views Between Officials and Members of Silver Commission Leaves Situation Apparently Unchanged as Regards Amount of Silver Remaining to be Purchased Under Provisions of Pittman Act

THE TREASURY DEPARTMENT and the Senate Commission of Gold and Silvery Inquiry during recent days have been "digging in" to strengthen their respective positions on the question of how much silver remains to be purchased under the provisions of the Pittman act. An exchange of correspondence passing between Senator Pittman, Nevada, and S. Parker Gilbert, Jr., undersecretary of the treasury, has brought out the divergent views in detail. Mr. Gilbert has "stood pat" on the department's determination to cancel allocations of silver made for subsidiary coinage. These allocations, involving 14,500,000, cannot justifiably be revoked, in the opinion of members of the commission.

It was expected that the two audits being conducted by the commission into silver production and coinage since the Pittman act became effective would be completed at least a few days before the end of May.

The understanding is that the school of thought opposed to the treasury officials in their stand for cancellation of the allocations is interesting itself specifically in the question of whether the silver allotted was actually coined. Undersecretary Gilbert is represented as claiming that the silver was held in the form of bullion and that so long as it was not converted into coin it did not become the subject of an actual purchase.

The Bureau of the Mint announced on May 24 that only 5,000,000 ounces of silver remained at that time to be purchased under the Pittman act.

SEE ACTUAL OBLIGATION

Following reaffirmation of the Treasury Department's policy the commission

took steps to establish the facts for the silver producers, Chairman Oddie and other members of the body having previously expressed the opinion that at least a moral obligation exists to hold

powers of the commission pertinent thereto."

VIEWS ARE SUMMARIZED

Senator Pittman in his letter to Undersecretary Gilbert, written following the Treasury Department official's entrenchment in the adopted policy, summarized his views as follows:

"The rescinding of the orders of revocation by the Treasury Department will continue the purchase of silver at \$1 an ounce for two or three months longer, and while this is but small assistance, it will give the mine operators an opportunity to arrange their business and probably prevent many failures that otherwise must occur.

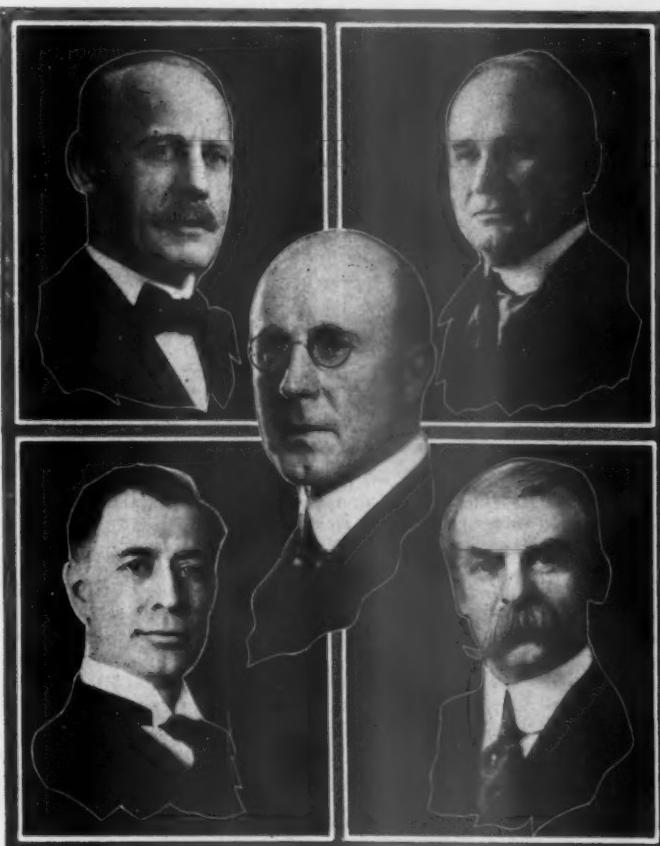
"The Treasury Department probably figures the actual number of men engaged in mining silver. They forget that whole communities are dependent upon the continuance of such mining operations. They forget that to every one miner there are from five to ten people who are equally dependent upon the continuance of this industry.

"The opinion of the Comptroller General, upon which the Treasury Department depends, expressly states that the

matter of revocation or nonrevocation is entirely within the discretion of the Treasury Department.

"I respectfully again urge the Treasury Department to reconsider the attitude that it has maintained and utilize the power that it undoubtedly has under the Pittman act to prevent the sudden and unexpected termination of the purchase of silver at \$1 an ounce."

Supplemental regulations covering administration of sales of silver under the Pittman act, framed by the director of the mint and promulgated by the Undersecretary of the Treasury, recently were issued.



THE SILVER COMMISSION

Center, Senator Tasker L. Oddie, Nevada, chairman; upper left, Senator Thomas Sterling, South Dakota; upper right, Senator Frank R. Gooding, Idaho; lower left, Senator Key Pittman, Nevada, vice-chairman; lower right, Senator Thomas J. Walsh, Montana.

the department to purchase of the silver affected by the cancellations.

In keeping with this general stand, the commission adopted the following resolution:

"Resolved, That Senator Pittman, as the author of the Pittman act, and in view of his familiarity with the entire silver question, be appointed a subcommittee of one to make such investigations as he may deem necessary regarding the operation of that act generally and its administration by the Treasury Department, and to exercise all the

WAR MINERALS ADMINISTRATION CHANGES

Future Procedure Calls for Awards to be Prepared by the Commission Directly for the Secretary of the Interior—John Briar Is Successor to Judge Robinson

AFTER TWO YEARS of distinguished service, Judge Ira E. Robinson resigned May 1 as Commissioner of War Minerals Relief in order that he might resume the active practice of law.

Under his administration questions of great importance to all war mineral claimants were adjudicated and settled. Many of these cases were of necessity taken up de novo. The work of reconsideration and adjustment of unpaid losses was a most difficult and delicate task.

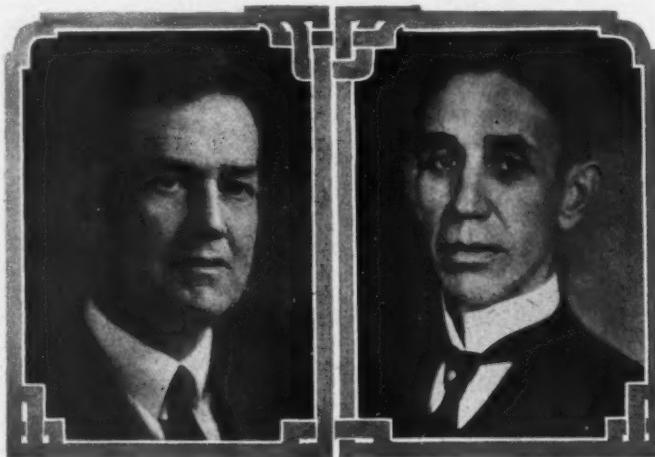
Of the 1,231 claims filed by mining operators throughout the country against the government as a result of development of minerals necessary for the conduct of the World War, about 800 of the most important ones have already been settled. Prior to his resignation, Judge Robinson, as War Minerals Relief Commissioner for the last two years, handled the majority of these either as original cases or in review of prior awards.

Subsequent to his assuming office in July, 1921, an amendment to the legislation was passed which liberalized the War Minerals Relief provisions. This amendment became a law in November, 1921, and necessitated a reconsideration of more than 1,000 cases on which appeals for rehearings were made. Under the amended legislation, Secretary Fall issued new and equitable interpretations of the act as amended which, as administered by Judge Robinson, facilitated justice to many hundreds of deserving claimants. Under his administration, the sense of justice and equity which claimants received was the basis of sincere commendation and approval of his term in office.

During his term Judge Robinson disposed of claims running into millions of dollars, which presented many difficult questions of law and fact. Of the original appropriation of \$8,500,000 made March 2, 1919, about \$6,250,000 in all has been expended to date.

Judge Robinson brought to his office a distinguished judicial experience of many years. He was member of the Supreme Court of the State of West Virginia during the years from 1907 to 1915, serving

as chief justice for the latter part of his term. He resigned in 1915 and in 1916 was Republican candidate for governor of the state. He returns to a large practice among his old clientele in West Vir-



John Briar (left) recently was appointed War Minerals Relief Commissioner to succeed Judge Ira E. Robinson (right), who resigned to resume his practice of law.

ginia and leaves an enviable record of accomplishment in the office of War Minerals Relief Commissioner.

While serving as Postmaster General, Secretary Work built up a fine spirit of loyalty among postoffice officials by recognition in his appointments of individual merit and accomplishment on the part of men already in the department. On becoming Secretary of the Interior, the policy in the organization of this department was of natural interest.

Among the most important appointments which have come before the new secretary, possibly the most important has been the appointment of the successor to Judge Robinson as Commissioner of War Minerals Relief. John Briar, who has acted as Assistant Commissioner of the War Minerals Relief Commission for two years, has been appointed to succeed Judge Robinson as commissioner. During that period he had under his perview and consideration hundreds of cases which have been brought up for reconsideration under the amended War Minerals Relief act. He established a reputation for square dealing and fairness with the claimants whose matters came before him, and his appointment is a gratifying recognition of the service which he has already rendered. Mr. Briar was formerly secretary of the Senate Interstate Commerce Committee and

for many years the confidential secretary of Senator Cummins of Iowa. He will proceed to close the work of the commission under the authority of the Secretary of the Interior, a very considerable task, for which he has already well demonstrated his ability.

It is understood that the future procedure will be that the awards are to be prepared by the commission directly for the Secretary of the Interior; that the intervening announcement of the award

and the basis therefor, heretofore presented to the claimant for acceptance or appeal, will be discontinued and that acceptance or appeal will only follow subsequent to the award made by the secretary.

War Minerals Relief work will be continuously expedited during the remainder of 1923, according to an announcement recently made by the Secretary of the Interior, and completed, by January, 1924.

UTAH MINE TAILINGS TAX NULLIFIED

IN AN OPINION by Justice Sutherland, the Supreme Court nullified the

Utah tax on metalliferous mine tailings which is based on the multiple of their net annual proceeds. The tax was successfully resisted by the South Utah Mines and Smelters in a suit against the Beaver County, where its property is located. In annulling the tax, the court reversed the Utah district court. The state authorities multiplied \$120,547, which was the net amount realized on the recovery of tailings in 1918 by 3, and fixed the value of the mining property for 1919 at \$361,641, upon which the company was assessed \$6,907. The mining company contended that the tailings, amounting to 900,000 tons, was not a mine or a part thereof, but separate and a part from its mining claims, constituting a valuable mineral deposit and taxable at its value and not on the multiple basis. The tailings were treated under agreement by the Utah Leasing Co., and the mining company contended that this was a sale of a deposit and was not assessable, as its property or the basis for assessment of its worked out and worthless mine as since 1914 its mining claims having become valueless and yielding no net proceeds were not taxable.

LAYING A BASIS FOR HARMONY IN INDUSTRY*

BY LAWRENCE F. ABBOTT, President, *The Outlook Company*

IT SEEMS UNGRACIOUS to be disagreeable on an occasion of this kind, but the first thing I have to say is disagreeable, or will be, to the coal operators present. The coal industry is the most hated industry in the United States today. It is hated by consumers, as well as by labor. I think this may be stated as an actual fact. It is so hated, that there is a proposal—supported by a very large number of intelligent and reasonable citizens—to take the coal industry and railroad transportation out of the hands of private operation and turn them over to the Government. If you want this done, don't have an American Mining Congress. If you don't want it done, and you desire, as I do, to have the coal industry, and the industry of railroad transportation retained under private management, I think the American Mining Congress and the Industrial Cooperation Division of that Congress are very wise things to promote.

My belief is that there are three factors that will save the coal industry and the railroad industry from Governmental operation, and retain them in the hands of private operation, where I want to see them retained.

THE FIRST FACTOR

The first factor is law and order. There can be no progress made in American life and industry unless we have law and order. To establish and maintain legal and orderly procedure is the first thing that must be done. Before any question of co-operation, profit-sharing, or welfare is settled, the citizens—whether coal operators, coal miners, editors, or what-not—will have to unite in establishing the principle of law and order. That is the first factor, and it must be taken hold of with courage, even if to do so robs us of some of our property.

The second factor—I want to avoid the word "partnership" to which objection has been made—is co-operation. Some way must be discovered by which the workers, the managers and the investors can co-operate. I used to think that this problem of co-operation was essentially a problem of profit-sharing. I do not think so any longer. Money is not at the bottom of this thing at all, in spite of the fact that

many of the organized labor unions are demanding what I believe to be preposterous wages. The fundamental desire of the working men is to have a voice in their industries as to the conditions of labor, as well as a voice regarding the sharing of the products of labor. At the present moment it seems to me that the best method of co-operation is what is commonly known as the Shop-Committee plan. This method has proved successful in the Pennsylvania Railroad, and in many great individual industries. It is the line along which is to be found the most hope today for peaceful co-operation in industry.

POWER OF PUBLICITY

The third factor is publicity. Mr. Coolidge has been talking to me during luncheon, and he says that the coal operators cannot get their side of labor controversies into the daily newspapers. I am not willing to admit this so far as my own journal is concerned. We want to, and do, present both sides. But, in any event, you must have publicity. If you cannot get it through the news columns you must get it through advertising. I say this with a little reticence, because I am interested in advertising; but I assure you that I am not soliciting advertising for the periodical of which I am the executive head! I don't see why you coal operators cannot combine and present the facts, if you are willing to have the facts known, to the general public through advertising, if you cannot obtain what you think you ought as news. If necessary, reduce your profits; spend some of your money in advertising, as an operating expense; and give the public the facts. One of the essential qualities of influential publicity is to tell the complete truth. The Mutual Life Insurance companies are compelled by law in New York State to make each year a complete statement of all expenditures. They print the salaries of their executive officers; the commissions of their

agents; and the fees of their directors. The public can see exactly how the money is spent. We have adopted this principle, to a large extent, in National banks. The National bank makes a statement, and the depositors and borrowers know how much is assigned to surplus, to undivided profits, to this, to that, and to the other thing. This is not always pleasant.

I am not sure that I like it myself; I am not sure that I want to give the public all the items and details of my income. But I am certain that we have got to stand this unpleasantness if the semi-public industries like coal, and oil, and railroads are to be saved from Government ownership and operation. The cards must be laid upon the table, face up, and without any concealing of aces up the sleeve; this is what I mean by publicity. Recall how publicity has operated in the case of the United States Steel Corporation and the Standard Oil Company! When I was a boy and a young man, the Standard Oil Company was probably the most hated industry in the United States. Then came along the United States Steel Corporation, which was organized with an enormous capital, dealing in a product more essential to the American home than the product of the Standard Oil Company, because steel goes into almost every part of the home, from shingle nails to plumbing. One would naturally expect that the United States Steel Corporation, with its enormous capital and its enormous influence on the steel industry, would have been disliked as the Standard Oil Company used to be, but it has never incurred popular hatred in this country. Why? Because it has made complete public statements. I think this indicates what publicity will do to assure fair treatment on the part of the public.

I agree with Mr. Callbreath that the question of dealing with the consumer on the one hand, and with the worker on the other, is the most vital question today

in American industry. If this question is to be settled efficiently and peacefully, you have first to call on every patriotic citizen to unite with you in establishing law and order. You must then establish some basis of just and humane cooperation with your workmen and finally you must give full publicity to all the facts of your industry.

Cooperation = Gain
Strife = Loss

*Delivered at Industrial Co-operation Conference, New York, April 27.

THE FOREMAN AS A FACTOR IN MANAGEMENT

*Holds Important Place as Reflecting Position of Management—"Widen Plan"
Brings Foreman Into Intimacy with Administrative Policies to Insure Accuracy of
Transmission of Ideas—Results in General Knowledge*

By J. G. BRADLEY

President, West Virginia Coal Association

THE MOST important factor in the preservation of industrial peace is that there shall exist between the employer and the employe a sense of common interest in the success of the business. There must, therefore, exist a clear understanding on the side of the employe of the part that he is expected to play in order that he may play it right. Our experience has been that there is no malice in the ordinary workman. He wants to do what he is paid to do, and to do it as nearly right as he can, unless it is obvious that his effort will not be appreciated. When he applied for his job he did not mean to join with us to do us wrong. It is not natural that he should scheme to cripple the source of his bread and butter. When he does something wrong, that results in injury to us, it is more often than not that he did it because he did not understand. Had he known differently he would not have erred, but he guessed instead of knowing. Strikes occur usually where the management has got out of touch with the employes, where understanding between them has broken down and so where the opportunity is presented for outsiders to get in and influence them, or for the misunderstanding and lack of contact to develop grievances to the point at which they seem unbearable.

NEAREST TO MEN

The foreman is the part of the management nearest to the men. His attitude is either a true or false reflection of the position of the management. Under the "Widen Plan" the foremen are instructed in the general policies of the management and how their work and the work of those under them should co-ordinate with the whole, and they in turn bring these ideas to the workmen.

At first, progress toward the desired end seemed slow, although, looking back, it was faster than might have been expected. I called together the superintendent and the foremen under him and explained in a general way the part that



they could play and the objects I was seeking to attain. I did my level best to make clear to them just what the company could do and what the men could do if all pulled together with emphasis on the importance of individual responsibility. I wanted them to pass the word along to the men, and they did.

Now, every Friday the superintendents of each department, their assistants and the foremen meet to discuss the business of our company with special reference to the employes. The foremen realize that they are the real representatives of the men to us, as well as our foremen. They know all the troubles and imaginary troubles of the men, and having been taken into the confidence of the company they are also a part of the management. They are able to guide the men intelligently in the performance of their work and, being in the closest possible touch with them, can tell us of wrongs that we can right before they become grievances and so destroy the agitator's ammunition.

PROMOTES GENERAL UNDERSTANDING

Our plant is not Paradise. Men come and go from Widen. Some do not fit and others find things that do not suit them and pass on to other employment. The "Widen Plan" may not suit all conditions, or everybody, but if there is any failure in our handling of matters affecting our employes it is not through misunderstanding or misrepresentation of our intentions. We give the truth to the foremen, who have taken an active part themselves in the formulation of our plans, and they in turn pass it on to

the men, and we all know the aims and objects of each other. The "Widen Plan" is justified to us by our experience.

LAND CLASSIFICATION MAKES PROGRESS

SEVERAL HUNDRED thousand acres of public lands in western states were classified by the Geological Survey during the month of April.

In the states of Idaho, North Dakota and Oregon more than 50,000 acres of land were designated as non-irrigable, and, as a result, were made subject to enlarged-homestead entry up to as high as 320 acres. A little more than 160,000 acres in Montana, North Dakota, Oklahoma and Wyoming were classified as stock-raising lands designated for entry in homestead tracts of 640 acres or less. Much of this acreage in these designations, it was announced, is included in original entries and is, therefore, of little significance to prospective homesteaders.

The Interior Department also released during April nearly 200,000 acres of land in Arizona, Colorado, Montana, New Mexico and Utah, included in previous coal withdrawals, which will now be thrown open to homestead entry. Similarly 90,000 acres of land in Utah previously included in oil withdrawals were restored to entry. The department also defined 3,000 acres in Wyoming as within oil and gas structures.

The Geological Survey of the Interior Department reported in April upon the structural relations of 740 applications for oil prospecting permits, bringing the total number of such reports rendered since the passage of the leasing law to 17,673. About 500 applications for permits are now pending. Reports were rendered also in April upon 43 applications for coal-prospecting permits and 24 applications for coal leases.

A METAL MINE EMPLOYEES' REPRESENTATION PLAN

Copper Queen Mine is a Center of Mutual Confidence Between Employer and Employee—Administration of Plan is Under Code Modeled After Federal Constitution—System is Eminently Successful

By H. C. HENRIE

Manager of Labor Department, Copper Queen Branch, Phelps Dodge Corporation

THE COPPER QUEEN MINE, now a branch of the Phelps Dodge Corporation, has been operating in the Bisbee District since about 1880. During these forty odd years of operations, the labor policies of the company have been such that labor disputes have been rare, an exceptional feeling of mutual confidence between the company and its employees has been established, and an organization more permanent than usually found in a mining camp has been built up. At the present time, in the mine department alone there are 41 employees having twenty or more years' service; 135 fifteen to twenty; 181 ten to fifteen; 107 seven to ten; 120 five to seven and 130 having three to five years' service.

Bisbee has always been known as an American camp. At the present time 87.2 percent of the underground employees of the Copper Queen Branch are American citizens and 7.7 percent have signified their intentions of becoming American citizens and have taken out their first papers. Only 5.1 percent are classified as non-citizens. Considering all employees of the mine department, 80.5 percent are classified as American citizens, 5.6 percent have signified their intentions of becoming American citizens and have taken out their first papers, and 13.8 percent are classified as non-citizens. Sixty percent of the underground employees and 64 percent of all mine department employees are married.

During the early period of operation it was comparatively easy to maintain a close personal contact between the higher officials of the company and the men, but as operations expanded, became more diversified, and spread over a larger area, the maintenance of the personal contact became increasingly difficult. It was necessary to delegate much authority to the foremen and bosses and they were not held accountable to any great extent for the proper use of that authority; consequently, and quite naturally, it was often abused, favoritism was not unusual, men were subject to the mere whims of their bosses, and, when

unfairly treated, had no chance of redress because no means had been provided for presenting grievances to those this condition that steps were taken by the management which ultimately led to the adoption of our present plan of employees' representation.

Strictly speaking, employees' represen-

called the Employees' Conference Committee was organized. The Employees' Conference Committee, which met once each month with the manager, was granted authority to discuss and recommend action on practically every matter of mutual interest to the employees and the company. This committee was elected semi-annually at elections held by the employees themselves, and representation was based on the number of employees working in the electoral units.

The Employees' Conference Committee continued to function until the adoption of a formal representation plan. The present plan was inaugurated only after the employees of the company had been trained for a number of years in committee work, and at a time when the company was not confronted with labor difficulties.

The Employees' Conference Committee had requested the management to outline to that committee its powers and authority. This action on the part of the committee immediately disclosed the need of a

plan which would define the powers and authority of the employees' representatives. In answer to their communication, the management requested the Employees' Conference Committee to appoint from its membership a special committee to investigate the question of employees' representation and to make recommendations for a plan which might be satisfactory to the employees and the company.

This committee, after a period of six months' study of the various types of employees' representation plans in force throughout the country, recommended to the management a plan which, except for minor changes, was approved by the directors of the company with the proviso that it must first be ratified by a two-thirds majority of the employees before becoming effective.

At a special election held for the purpose of determining whether or not the employees desired representation, 90 percent of the underground employees and 82 percent of all employees voted in favor of its adoption. Only a small percentage of the Mexican employees voted to adopt



THE LIBRARY
Where eager minds find a fountain of knowledge in the hills at Copper Queen

tation was not a new departure at the Copper Queen, for various employees' committees had been functioning in a limited way for some time prior to the inauguration of a formal representation plan.

The Employees' Benefit Association was established in January, 1910. Since this association is maintained quite largely by contributions from the employees, they elected trustees from both the mining and smelting departments to represent them on the board of control.

In 1915, it was decided that inasmuch as the employees contributed to the support of the Hospital Department, they should have a committee to cooperate with the management in the administration of that department. This committee proved so helpful that later the employees were requested to elect a Grievance Committee, and the duties of the old Hospital Committee were extended to cover all questions of welfare and grievance.

In 1917 the Grievance Committee was enlarged to provide additional representation. In May, 1920, a new committee

the plan, due to the fact, it was learned later, that they did not thoroughly understand its object, purpose, and provisions.

It should be noted that the plan was inaugurated under extremely favorable conditions—namely, the previous policy of the company had developed an unusual feeling of confidence, good will, and loyalty; the organization was composed quite largely of employees who had had long service with the company; the majority of the employees were English-speaking and American citizens; the plan was not adopted as an emergency measure, but was inaugurated at a time when there was no labor agitation; and finally, the plan was drafted and sold to the employees by representatives elected by them.

THE REPRESENTATION PLAN

The plan is provided for in a constitution modeled after our Federal Constitution. It provides for three departments, the legislative, executive and judicial.

The Legislative Department consists of a House of Representatives and a Senate.

The house is composed of representatives chosen every six months, at elections conducted by the employees, to serve for a term of one year. Electoral divisions are allowed representation on the basis of one representative for each one hundred employees or major fraction thereof.

In order to qualify as a representative, an employee must have been in the employ of the company for at least twelve months immediately preceding his election. He must also be a citizen of the United States and twenty-one years of age. Employees who are classified as foremen or bosses, or whose duties are of a supervisory nature, cannot vote for or serve as a representative.

The House of Representatives assembles at least once every month and special sessions are called by the manager when necessary. The house elects its own officers, appoints its own committees, and adopts its own rules of procedure.

At the first session of the house the representatives were divided into two classes, the term of the first class to end at the expiration of six months, and of the second class at the expiration of one year. This arrangement insures that half the representatives are always holdovers, thus preventing the choice of an entirely new group of representatives at any regular election.

STANDING COMMITTEES CREATED

After organization, the house created the following standing committees: Election Committee, Wage and Bonus Committee, Safety and Working Conditions Committee, and Employees' Magazine Committee. Matters coming before the

house are referred to one of the above committees for investigation and recommendation, in order to facilitate action.

The senate is composed of members chosen by and from among the foremen, bosses and department heads. The method of election and the qualifications of the candidates are practically the same as those applying to the House of Representatives.

POWER AND AUTHORITY

The constitution provides that:

"The employees of the company shall have a voice in the adoption of rules and regulations governing their employment, through representatives chosen from among themselves by secret ballot.

"Legislation shall not become effective until it has passed both Houses of Congress and has been approved and signed by the manager of the Copper Queen

THE COURSE OF ACTION

"I have had occasion to give considerable thought to this matter, and my own conviction is that at the present time the greatest single opportunity in the way of working improvement lies in the direction of developing systematic, well-organized and effective means of counteracting and offsetting the propaganda that is being disseminated by vicious influences seeking to disrupt not only good relations between employer and employee, but to undermine the foundation of our Government."—Oscar Rohn, General Manager, East Butte Copper Mining Company, Denver, Colorado.

Branch. If a measure does not meet with the approval of the manager, he shall return it with his objections to the house in which it originated, which body after noting the objections may proceed to reconsider or revise it to meet the objections; but any measure may be passed over the manager's veto and become effective by a two-thirds vote of the members elected to each house."

SPECIFIC POWERS GRANTED

In addition to the general powers and authority granted to Congress, the following specific powers were embodied in the constitution:

"Congress shall have the power:

"1. To enact a code of safety rules and provide for the enforcement thereof.

"2. To enact a code of rules for the employment and discharge of employees, and provide for the enforcement thereof.

"3. To enact a code of rules concerning promotion from positions of lower rank and pay to positions of higher rank and pay, up to and including the position of shift boss.

"4. To pass such measures as may be necessary to provide for an equitable division between the employees and the company of any saving in the cost of operation as a result of increased labor efficiency or economy in the use of supplies when compared with a fair standard of efficiency for the same.

"5. To pass such measures as may be necessary to provide a voluntary pension system for employees, to be paid from a fund to be contributed equally by the employees and the company.

"6. To pass such measures as may be necessary to establish a Benefit Association and maintain a fund therefor, to be contributed jointly by the employees and the company, from which sickness and accident benefits may be paid to employees.

"7. To pass such measures as may be necessary to establish an Apprentice Plan whereby the young men of the community may be given a chance to learn a trade under the proper supervision.

"8. To pass such measures as may be necessary for the peaceful settlement of all differences arising between the employees and the company."

When the question of employees' representation was being considered, the management decided that the congress should be granted power and authority to legislate on all questions relating to working conditions, safety, hours of labor, wages, and in fact all matters of mutual interest to the employees and the company. It was realized that if the power to legislate on certain subjects such as working conditions, wages, etc., were denied the representatives, then the plan would be almost certain of failure. If these matters, which are of the greatest importance both to employer and to employee and over which the most serious controversies result, could not be settled satisfactorily through the means provided under the plan, then obviously the plan would not accomplish the purpose for which it was intended, and from the standpoint of the employees it would be a plan with form but without substance.

OTHER PLANS IN EFFECT

For a number of years prior to the adoption of employees' representation, certain other plans—such as the pension plan and the Employees' Benefit Association, as well as certain safety and employment rules—had been in effect. These plans and rules had been worked out and placed in operation by the management of the company. At the time of their installation they appeared to be quite satisfactory; however, as the company expanded, and its operations became more diversified, certain serious weaknesses developed in first one plan and then another. It was evident that if the company were to secure the maximum benefits resulting from such features as the pension plan

and the Benefit Association, these plans should be revised and perfected. It was for this reason that the eight specific matters mentioned above were included in the constitution.

In order to provide against the possible curbing of activity, employees' representatives are guaranteed protection by the company. This particular clause reads as follows:

"No Senator or Representative shall ever be penalized by the company or the officials thereof for any speech or debate in either house."

SETTLEMENT OF GRIEVANCES

Prior to the adoption of employees' representation, the management found that the most difficult problem with which they had to contend was the settlement of minor grievances, and there was no satisfactory method for placing before the employees the facts relating to specific grievances. As a result, the agitators and malcontents had unlimited opportunity to present their own version of these matters and the employees rarely ascertained the real facts in a given case. It was therefore decided to provide for a Grievance Committee. The powers of this committee are defined as follows:

"Congress shall have the power to appoint a standing committee to consist of three members from the House of Representatives and two members from the Senate, to be known as a Grievance Committee. It shall be the duty of this committee to hear grievances of employees and to decide upon settlement of same. Decisions made by this committee shall be submitted in writing to the manager. If he concurs he shall see that the decision is promptly enforced. If he does not concur, he shall promptly call the committee in conference for further consideration of the grievance. If a majority of the committee and the manager fail to reach an agreement as to settlement, the grievance shall be submitted to the supreme court for final decision, and if the employee submitting the grievance is not satisfied with the settlement of his grievance he may appeal his case to the supreme court."

THE EXECUTIVE DEPARTMENT

The executive powers of this organization are vested in the president of the company, who has created an executive department to represent him and the general manager in the conduct of the routine business of the company. The president may and has delegated his authority to the resident manager.

"The Executive Department shall consider all measures passed by Congress and shall, through the manager, approve or disapprove the same within ten days after presentation to it. The manager may attend the meetings of either house at any time, and may participate in dis-

cussion of any measure before either house, but shall have no vote."

The judicial powers of the organization are vested in a supreme court. The supreme court consists of three judges appointed by the manager by and with the advice and consent of Congress. These judges hold office during their employment or good behavior.

The supreme court has original jurisdiction in all cases in which the constitutionality of any measure is in question,

A DEFT SUMMARIZATION

"I notice that your nine fundamental points contained in the proposed plan might be summarized by stating that the needs of the mining industry is to practice the Golden Rule. For I certainly believe that the nearer you can come to conforming the mining practice of both the operators and employers to the above rule the more certain will be our approach to industrial peace throughout the country."—Wm. Griffith, Mining Engineer and Geologist, Coal Exchange Bldg., Scranton, Pa.

and has appellate jurisdiction in all cases arising out of grievances between employees and those in authority over them. Appointments to the supreme court were made as follows: One member is the representative of the employee, one member represents the company, and the third member is a well-known merchant of the community who has no connection with the company in any way.

Amendment and termination of plan:

The plan may be amended by a two-thirds vote of all the duly elected members of each house, and no amendment shall become effective unless approved by the manager.

The plan may be terminated after six months' notice by a two-thirds vote of the employees of the Copper Queen Branch, or by action of the Board of Directors of the company.

Since the plan was adopted less than two years ago it must still be regarded as an experiment. Experience thus far, however, has shown it to be productive of some excellent results.

Shortly after the installation of the plan, a request was made to the company that a plant magazine be published, in order that the employees might have some means of being kept informed as to what business was being transacted by their representatives.

This request was granted. The minutes of both houses are printed verbatim, likewise remarks of the manager and other members of the supervisory force who at intervals address these hours on subjects of mutual interest.

We have found that the information disseminated in this manner is read and understood by the majority of the employees, and we believe that there is a much better understanding of the problems which confront the management. In addition, all the facts regarding any matter under consideration in either house are laid before the employees through this publication. Where before the employees knew and saw but one side of a situation, they now have an opportunity to ascertain all the known facts. All this has proved to be very helpful in promoting a better understanding between the employees and the company.

Since the organization of the house, the former code of safety rules has been completely revised and amended by the representatives, and a means provided for the enforcement of these rules. The House of Representatives, of their own volition, adopted the following proviso regarding the enforcement of the safety rules:

"Employees violating any rule contained in this measure shall be disciplined as follows:

"1st Offense: The employee shall be warned and the rule in question explained to him by his foreman or boss, after which the foreman or boss shall promptly notify the Labor Department of the violation, in writing.

"2nd Offense: The employee shall be disciplined by a lay-off for a period of not less than three days nor more than fifteen days, and the foreman or boss shall promptly notify the Labor Department of his action, in writing.

"3rd Offense: Any employee violating the rules and provisions of this act, after having first been warned and then disciplined by a lay-off, shall be discharged.

"Foremen and bosses are responsible for the enforcement of these rules in their respective departments, and non-enforcement on the part of a foreman or boss shall subject him to the same discipline as is provided in Paragraph "3" of this section."

CODE OF RULES

The house has also enacted a code of rules regarding the employment and discharge of employees. The following specific rules may be of interest:

"The right to work shall not be denied anyone because of race or nationality, or because of membership or non-membership in any organization, the principles of which are not in conflict with the Constitution of the United States and the State of Arizona.

"The right of the company to select its employees shall not be questioned.

"For offenses other than certain specified offenses, the employee shall not be discharged without first having been notified that a repetition of the offense

shall make him liable to dismissal from the service of the company.

"Any employe who is recommended for discharge must be informed as to the reason for his discharge by his foreman or boss.

"Any employe who feels that he has been unjustly treated, subjected to any unfair conditions, unjustly discharged, or has a grievance of any nature, has the right to appeal his case to the Labor Department or to the Grievance Committee."

The Grievance Committee since its establishment has heard fifteen discharge cases. The decision rendered in every case was acceptable to the management. In one instance an employe appealed to the supreme court, which sustained the decision of the Grievance Committee.

Three employes who had been recommended for discharge by the foremen were reinstated by the Grievance Committee.

Perhaps no feature of the representation plan is more popular with the employes than the Grievance Committee. The fear that the authority of the foremen and bosses would be undermined and that discipline would disappear has not materialized. Almost invariably the foremen and bosses have undertaken to reform their ways when their attitude was the cause of grievances, and they have endeavored to adjust complaints satisfactorily when first brought to their attention.

AN AID TO DISCIPLINE

Many of the foremen have stated that the Grievance Committee is an aid rather than a detriment to discipline. When in the past they found it necessary to discharge an employe, the employe, as a rule, gave his version of the case to the other employes of the department. The foreman himself could not readily lay his side of the case before the men. As a result, in most instances the men felt that another injustice had been dealt out. As matters now work out, the employes are well informed as to the pro and con of each individual case.

It is characteristic that the majority of the new employes who remain with the company a year or two, or long enough to understand its policies, become loyal and satisfied workmen. Practically all discontent in the past has centered in the group having less than two years of service with the company. Since the adoption of the plan well qualified representatives have been elected. Almost without exception they have been employes who have long service with the company and who are representative of the majority of the employes.

A FAIR WAGE POLICY

It has always been the policy of the company to pay a fair wage. As a re-

sult, the question of wages has received very little consideration at the hands of the representatives. The house has presented some recommendations pointing out inequalities in the wage scale which heretofore had been overlooked. However, the apprehension that one of the first acts of the representatives would be to raise wages has not materialized. Unquestionably, employes desire and should have a voice in the determination of the wages paid, but it is difficult to foresee how any group of conservative-minded workmen would deliberately demand wages which they knew would bankrupt the company employing them.

We believe that the employes of this company have grasped the idea that the interests of the employe and his employer are mutual, and that neither can succeed unless both succeed. Our experience thus far would indicate that when the complete facts in a given case are laid before the representatives, they can be depended upon to reach a logical, just, and sane decision.

We do not believe that the representation plan alone will absolutely insure against labor trouble, but rather that it will tend to minimize labor disputes and at least give the company some means of dealing with its employes.

NEW PROCESS HOLDS HIGH PROMISE

DEVELOPMENT of a metallurgical process that "gives promise of great commercial importance" is indicated in a recently issued Bureau of Mines bulletin entitled "The chloride volatilization process of ore treatment." The experiments described in this bulletin cover part of the investigations carried on by the bureau in cooperation with the department of metallurgical research of the University of Utah, in which ores from all parts of the United States were subjected to tests, large quantities of ores not amenable to any other process being handled.

Chloride volatilization is defined as the process of separating or isolating certain metals from worthless gangue or other minerals by means of alkali or alkaline earth halides—such as salt and calcium chloride—which are added to the prepared ores in proper amounts, treated in a suitably designed furnace at temperatures high enough to form and to vaporize or volatilize the chlorides of the metals present. The exact chemical reactions are not definitely known. Vaporous chlorides of certain metals in the ores are formed and are drawn away from the heated charge into properly provided containers, whence they are recovered by some suitable means.

STILL IN EXPERIMENTAL STAGE

The art of treating ores by the chloride volatilization process is still in the experimental stage. The process has not been sufficiently developed along metallurgical lines to warrant a definite statement as to the exact place it will occupy in the industry. The basic theory of the process has received the attention of prominent metallurgists for 20 years, and considerable research and experimental work have been carried on.

If commercially utilized, the process will fill a long-felt want in metallurgy, especially in the treatment of oxidized and semioxidized or "carbonate" ores of copper, lead, and silver. Such ores are

difficult to treat by gravity concentration or by flotation; in the former their tendency to slime upon crushing and their being of lower specific gravity than the sulphide minerals cause serious losses; in the latter much has been done in sulphidizing oxidized ores and subsequently recovering the artificial sulphides by flotation. Difficulties in proper sulphidizing and the low recoveries obtained have not balanced the cost of the treatment in many plants and in very few has it proved successful.

J. F. CALLBREATH MAKES TOUR OF MINING DISTRICTS

JAMES F. CALLBREATH, secretary of The American Mining Congress, left Washington May first to enter upon an extended trip through western mining centers.

He addressed the graduating class of the Colorado School of Mines at Golden, Colo., on May 18th. The Colorado chapter of The American Mining Congress and the Metal Mining Fund tendered an informal dinner in Denver on the evening of May 18th, which was attended by a large number of Colorado operators.

Mr. Callbreath made an address upon the mining legislative situation before the Northwestern Mining Association at Spokane, Wash., May 22nd. He also attended the meeting of the local chapter of the Institute of Mining and Metallurgical Engineers at Portland, Ore., going with them to Corvallis.

Mr. Callbreath will address the members of the Los Angeles Chamber of Mines and Oil and the Los Angeles Stock Exchange on June 7th and will attend the annual meeting of the Board of Governors of the Western Division of The American Mining Congress to be held at San Francisco June 11th, 12th and 13th. He will meet with the Salt Lake Mining Operators some time the latter part of June and will attend the meeting of the Rocky Mountain Coal Association in Denver on June 20th.

THE FOSTERING OF INDUSTRIAL MORALE

By W. A. GRIEVES

Chairman, Division of Industrial Cooperation, American Mining Congress

HERE IS a conception going the rounds of industry today that industrial morale is something that can be bought—that it can be picked from the shelf somewhere and placed where it is desired and—presto, everything is lovely. But a little thought must soon tell us that morale is never in itself wholly a cause—it is most always an effect—a result of right thoughts, right actions, and wholesome environment.

I shall not present any panacea. I haven't any. I know there is such a thing as morale, but to tell what it is or how to get it, I am very much like the old colored parson who was questioned by the agnostic of how he knew there was such a being as God. The old parson replied: "I don' know, sir, but I jes' acts as though he is, and then I jes' know he is." And it may be that this simple answer of the colored parson is about the best one we can get for the question of building morale. If we run our business on the basis that morale is, then there will be no question about its being a real-for-sure thing with us.

IN A NEW ERA

One thing, however, must be very apparent at this time to men or women who are doing any thinking for themselves. We are in a new era. The reading on the slide-rule of industry has changed. In 1914, when the war started, we were basking in the sunlight of more or less self-satisfaction. We were familiar with the reading as the slide-rule of commerce revealed it at that time. But the reading has changed. The rule has been given a great big jolt and we find ourselves confused. We have not yet gotten our bearings. We are groping about in an endeavor to get a new reading, and it's going to take some little time for us to read accurately.

I know that it is a very popular thing today to appear to be alarmed at what possibly may happen. I for one absolutely refuse to be stampeded. It has taken this good old country of ours two or three centuries to get to the high position which she now holds; and the forces that have been at work all through these centuries are not ethereal. They are not going to be thrown aside and destroyed by a few hot-headed Bolsheviks. While the jolt which jarred the slide-rule in 1914 was a big one, it did not remove the lines of foundation and figures of principle upon which our country has been built. I know this doctrine is not very orthodox today when every light-headed sentimentalist is capitaliz-

Trust men and they will be true to you; treat them greatly and they will show themselves great.

—Emerson

ing his more or less ability to agitate through the newspapers and magazines.

SAME SCOPE OF REFORMS

Let us be sane. Let us have just as many reform measures as we can assimilate, and no more. All great and permanent things are not created in a day. It has taken this old world many centuries to come up to its present status, and even the most pessimistic will have to admit that the job thus far has been along the lines of progress. We can't go back and we don't want to go back; but it's going to be just as difficult—just as disastrous—to attempt too rapid development as it is to try to return wholly to past methods and practices.

Today—as always—we have the extremes—those who are reactionary and those who would "bust" the whole machine in a mad endeavor to bring the millennium. Industrial reform—whatever may be meant by that popular phrase—sounds good; but before we build too high hopes of its being a solution of all our industrial ills, let's not forget the past. The human race seems to be so constituted as to be able only to assimilate slowly. There is just as much danger in too much democracy as in too little. Look at Russia: A very pronounced example of too much of an apparently good thing. Let's not overlook the stern fact that the average man is quite willing to "let George do it." We, as Americans, like to make ourselves believe that we really represent ourselves, when the cold truth is that we much prefer to be represented. The plea for a larger part in management is not so large or incessant as is the desire or knowledge of knowing that we can if we want to.

Many years of working with and dealing with men have convinced me of the intense honesty—the fairness—of the average man, and, while I am for the broadest kind of industrial democracy consistent with safety, I cannot overlook the teachings of experience. We, as Americans, think we want much which, when secured, seems to be appreciated little, or, if appreciated, is not manifestly taken advantage of. Take, for example, the question of the primary. We howled our heads off against the old apparently autocratic political convention. And we

continued to howl until we got the primary. And what has been the result? Not that the primary is not a good thing. Anyone who thinks at all must admit that it is ideally correct. But what has been the experience? You know as well as I.

The fact that some of our most advanced writers are advocating the return of the political convention is indicative of the trend of action and a clear demonstration of the fact that it is only a few after all who are willing to assume responsibility.

NOT A NEW THEME

I know that this sounds like the rankest kind of reaction. But is it not true? So-called industrial democracy is not an entirely new play. It's true that some of the acts and scenes have been transposed and the stage settings made perhaps somewhat more elaborate; but the plot or theme is well known and has been on the board for many years. Many fine industrial institutions in this country have been securing as good results for nearly twenty years as those plants are now securing which have just recently taken on these phases of co-operative activity and who think something really new has been discovered.

In any effort to build up industrial morale, we must understand the foundation upon which we are to erect and the materials with which we have to build. Morale resolves itself into one or two very fundamental propositions, namely, confidence and the square deal. To create an atmosphere of real desirability in any organization, it is not necessary to start a revolution. In order to secure the best bread, the baker does not indiscriminately use an unnecessary supply of yeast. The proper amount of leaven, intelligently used, finds its way through the whole setting and the results desired are secured. And, if you will pardon the homely simile, just as it takes proper time, temperature and conditions for the bread to rise in all its richness, so does it take time, right conditions and hard work to bring about a desirable state of morale in any organization. Sounds a bit academic and platitudinous, doesn't it? But there's very little that's new. I am ready to move a special vote of thanks to any one who will bring us one really new and for sure original idea.

It was only the other day that a chap dropped in to see me. He was a bit young at the game if not in years, and, for that reason, should not have been taken too seriously. He said: "I've got a new idea on this whole question of in-

dustrial democracy and of contentment among workers. The trouble is we have been expecting too much from the worker. The average worker," he continued, "is like a child—he's moved by sentiment. He possesses very little ability to think and reason out his own problems; they are beyond him. I am a strong advocate of the emotional appeal." And then my visitor proceeded to show me a number of charts which he had devised and which were to be used in a "scientific" manner to arouse and stimulate the aforesaid emotional appeal to the worker's reason. He was also obsessed with the idea that the workers of this country were a lot of sheep, ready at any moment to throw aside the principles upon which our great success has been built, and follow such bell-wether leaders as Lenin and Trotsky, and their ilk. He did not stop to consider what the real facts and conditions are. The average worker does think. He may seem at times to waver in his thinking and acting; but in ninety-five cases out of every hundred he can be counted on to think sanely and act constructively.

I would not for a moment reflect on any legitimate plan that will in any way help us to the desired end we are seeking. But when I think of this subject more in terms of problems—the more I am convinced that we may possibly be taking ourselves a bit too seriously. I used to think in the early days of my experience in this line of endeavor that some day we would be able to devise some plan through which all of the perplexing problems of our industrial life would be solved, but, the longer I work with them and study them, the more I am persuaded that there is no Utopia. In a comparative sense, the world has much the same problems it had two thousand years ago. Human nature has changed but little. We are not striving for anything essentially new. It's but another angle of the same question—upward through sacrifice—regeneration through suffering—but ever upward.

There can never be any wholesale recipe for fostering industrial morale. Confidence is the foundation stone upon which it must be built. And this confidence is not merely a question between management and employes—it must have as a fundamental also an expression of confidence between employes themselves. This is frequently overlooked. It has been said time and again that employes are often employes' worst enemies. Note the attitude of the man newly promoted. Is it always as broad and sympathetic as that of the real boss? I am afraid not. It hasn't yet been tempered with the spirit of justice. The arrogance of man in his earlier stages manifests itself. It's only after the broader viewpoint has been attained that the larger sympathies are evident.

IMPORTANCE OF INFLUENCES

Very few things in this life are greater than the influences creating them; and back of every great idea is the heart of a great person. It's as impossible to build industrial morale in an organization without the spirit of the square deal as it is to organize a League of Nations that will prevent war without first having said nations infused with the spirit of justice and equity.

Whatever chasm exists between management and employes in any organization can only be bridged through the practice of the golden rule. It all goes

THE GREAT NECESSITY

"There is great need of a campaign of education among both employers and employes which will settle for all time the dependence of one upon the other, and the present industrial strife going on in this country proves the need of this campaign."—Bruce C. Yates, Supt., Homestake Mining Company, Lead, South Dakota.

back to this fundamental. It matters but little about our methods. These change over night. But principles are eternal. What I might think the best method for my little trouble might not suit yours. There isn't any beaten path. No one scheme of industrial democracy is going to be a solution. Any one plan that succeeds well can largely be traced to the personality of some man with a big heart and a big brain controlled by big sympathies.

We must dig deeper than any one scheme, no matter how cleverly devised and applied. Any organization that hopes to build up morale by fighting agencies brought into being as a result of its own selfishness and unwillingness to deal fairly, has already greased the runways to its disaster.

Coercion for either management or employes can never be a permanent cure. We cannot build morale in an effort to substitute the counterfeit for the real thing. Every man is entitled to the best pay consistent with his ability to produce. And highest wages with corresponding good conditions are not necessarily a guarantee against discontent.

QUESTION OF COMMON SENSE

The whole question of fostering morale, as I see it, simply resolves itself into one of common sense. It has as its foundation justice. There are a thousand ways in which it may be brought about. Each one of us may think that our methods are the very best; and maybe they are for us. The man or woman has not yet been born who has worked out a perfect plan. I know that there are many such claims being made

these days, but I do not take them too seriously. They are all adding to the sum total of better things industrially, and as such we welcome them. The value of any scheme will depend upon how we view it as applied to our particular problems.

I am somewhat afraid of any plan that claims to bring an industrial Utopia. As I write these lines my eye falls upon the following advertisement which is an example of much that is appearing these days:

"Mr. Blank tells how he has completely done away with strikes—how he has entirely eliminated antagonism and dissatisfaction and changed the whole relation between employer and employed. By the working of this unique method, Mr. Blank does away entirely with the ill-will and antagonism of labor. He does away with the time killing tactics. He completely settles the hiring and firing problems—thus doing away for all time with labor turnover."

I would like to believe this, just as I would like to believe that Marxian Socialism would be an international panacea for the diseases of our industrial and political order. But those of us who have been up against the game for twenty years or more, know that, with all respect for all plans that have as their aim the bettering of conditions, they are not going to bring in an industrial millennium. They will do their bit; but to say that any one scheme will do away for all time with the festering spots of industrial misunderstanding, is making a claim far beyond the bounds of good sense and good reasoning.

In spite of an apparent pessimism, I hold a very broad optimism. I believe in the average man and his willingness to lend himself to any plan that has as its basis common sense.

TASK REQUIRES PATIENCE

I know there's a stupendous scramble these days in an endeavor to inject morale into industry, but it can't be done by the hypodermic route. There's no use fooling ourselves into believing that we can get in a few weeks or months what naturally requires years to obtain. We're having some splendid examples of the foolishness of this method right now.

The biggest wages, the best working conditions, and an honest effort to divide the profits fifty-fifty won't even satisfy. The whole question has a more fundamental element. It goes deeper than any one or a thousand methods. It has as its rock bed, confidence. It has as its superstructure a combination of all those factors that make for good will. And these cannot be catalogued. They are found in the hearts of men who have learned to play the game fairly. They are nurtured in the atmosphere of harmony, which, in turn, is nothing but the culture bed of efficiency.

PERSONNEL CHANGES IN BUREAU OF MINES

DURING THE ABSENCE in Europe of George S. Rice, chief mining engineer of the Bureau of Mines, Department of the Interior, and until further notice, James W. Paul will be acting chief mining engineer, with headquarters at Washington.

C. A. Herbert is detailed to Pittsburgh to serve as acting chief coal mining engineer, beginning June 1, for a period of five months, and will report through the superintendent of the Pittsburgh station to Mr. Paul. He will have immediate charge of the experimental mine work and other coal mining investigations, except the coal waste inquiry for the U. S. Coal Commission, which work will be handled directly by Mr. Paul.

M. van Siclen, assistant to the chief mining engineer, will continue in that position and act as executive officer for the mining division, consulting on technical matters with the acting chief mining engineer. He will also act in the capacity of district mining supervisor in leasing matters, except petroleum, on Indian lands, and will maintain contact with the commissioner of Indian affairs on all Indian mineral leasing matters, consulting with H. I. Smith on coal leasing technical matters.

H. I. Smith will continue as mining supervisor and will report through the assistant to the chief mining engineer on administrative matters, consulting with the acting chief mining engineer on technical matters.

S. P. Howell, after July 1, will be detailed to the field investigation of liquid oxygen explosives under the new appropriation. J. E. Crawshaw will continue to serve as acting head of the explosives section and report through the superintendent of the Pittsburgh station to the office of the chief mining engineer.

MINE LABOR SITUATION IS REVIEWED

THE LABOR DEPARTMENT reports a steady employment in metal mining in Arizona, many new operations opening and old ones reopening. Skilled miners are in demand in all metal mining camps, notably in the Bisbee district, and in Superior, Globe, Miami and Ajo. Skilled white labor, such as shift bosses, mechanics and other classes of skilled and semi-skilled labor, is in strong demand by a copper company at Ray. Construction of a concentrator, railroad and other metal mining equipment costing \$4,000,000 is under way at Superior. Continued expansion of metal mining (principally copper) activities at camps near

Tucson is stimulating all lines of industry, with labor sufficient for demand except metal miners. There has been considerable increase in employment throughout the copper mining districts of Bisbee, Warren and Lowell, conditions nearing normal. Metal mining companies have increased their forces in these districts by 225 in a month and 2,600 miners are now employed. A slight shortage of experienced miners exists, although unskilled labor is sufficient.

Increased activities in metal mining are noted in Utah. Metal mining companies in the Salt Lake district require several hundred unskilled workers for above-ground work. Shortages of unskilled labor exist at copper mines near Salt Lake.

In Wyoming, there is a surplus of coal miners due to part-time operation of coal mines.

A NEW ATMOSPHERE FOR INDUSTRY

BY U. S. SENATOR GEORGE F. MCLEAN

A CCUMULATED and inherited capital must take the initiative in the educational process required to clear the atmosphere of the unfounded causes for complaint and they must see to it that there are no well-founded causes for dissatisfaction. It will be easy to convince the average laboring man that the larger the national income the brighter his chance for an increase in wages. The richer we grow the better, provided he gets his rightful share. The way to get this share does not lie in destruction but in creation and a fair division of the increase.

The prosperity of the workers absolutely depends upon industrial peace and peace is impossible without good will and capital cannot retain the good will of the workers unless it pays for it and the workers must in turn render willing and efficient service or there will be nothing to divide. As I have said many times, the ultimate and perfected self-government begins and ends with the good behavior of the individual.

Organized capital and organized labor must work together to the end that friendly, intelligent, fair and profitable cooperation may result. They must bore their cause from within as their enemies bore from within. They must use the augur of fair treatment and sound economic and business principles to meet the knife of envy, ignorance and distrust, used by their enemies. Wise, regulative legislation is always helpful, but the idea that class hatred can be removed by force of law or that cooperation and good will can be brought about between capital and labor by an act of Congress must be abandoned by all intelligent men and women if real progress is to be made.

COLORADO ORE STUDY SUBJECT OF REPORT

R ESULTS OF a study of the metallurgy of the low-grade and complex ores of Colorado, made by the Department of the Interior, are given in Technical Paper 283, by Will H. Coghill, metallurgist, and C. O. Anderson, assistant metallurgist, just issued by the Bureau of Mines.

This study had its origin in the fact that the mineral production of the state has decreased because the rich and more readily accessible deposits have been largely exhausted, and the primary sulphide ores are in many instances too low grade to be profitably exploited or too complex in the mineralogical and physical composition to be amenable to the usual treatment methods for turning the valuable metallic constituents to commercial account.

As a first step in this study a field investigation of the low-grade and complex ores of the state was undertaken jointly by the Colorado School of Mines and the Federal Bureau of Mines, with the object of determining the character and approximate quantity of these ores, and, where found in sufficient quantity to constitute a metallurgical problem, to carry on experimentation in an effort to devise suitable treatment, and thus make them commercially available. The experimental work consisted, first, in a careful physical examination of the ore, followed by a complete chemical analysis to determine the valuable metallic constituents. If these preliminary tests showed that the combined minerals were so locked in the ore they could not be readily separated into marketable products, then methods of treatment were applied which experience had shown would most likely give the desired results.

Technical paper 283 may be obtained from the Department of the Interior, Bureau of Mines, Washington, D. C.

STUDY OF EXPLOSIVES

T HE BUREAU OF MINES is continuing experiments at metal mines in Arizona for the purpose of noting and rating the factors affecting the efficiency of powder used in blasting. Successive charges in talc were detonated from opposite ends and the size and shape of the resulting cavities measured. A series of 25-inch holes was drilled in uniform ground and blasted with different grades of powder and by various methods of loading to ascertain the proper way of shooting out holes in drift rounds. A study of blasting practice in open cut mines is being made by S. P. Howell and E. D. Gardner.

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SUPREME COURT ACTS ON MINING CASES

THE SUPREME COURT has recently handed down decisions in a number of cases of exceptional interest to the mining industry.

In an opinion by Justice Butler, the court affirmed the decision of the Court of Claims which disallowed a claim of L. Vogelstein and Co. for prices for copper in excess of those fixed by the government during the war. The company claimed that the government price of 23½ cents per pound was insufficient, as it cost the company that amount to produce the copper. The court held that the company was not entitled to the 26 cents per pound rate it claimed, as copper prices were fixed by agreement of the copper companies with the government, to which the Vogelstein Co. had been a party.

Justice Butler also delivered the opinion of the court on the appeal of the government from a decision of the Circuit Court of Appeals, Third Circuit, which allowed the New River Collieries Co. prices for coal requisitioned by the government in excess of those fixed by the President during the war. The court affirmed the lower court on the ground that the coal company was entitled to the prevailing market price for this coal, for which there was at the time of government commandeering an active demand in the export trade.

In an opinion by Chief Justice Taft, the court affirmed the decision of the lower courts in a case brought by the Interior Department to recover increased value of mining leases and purchase of coal lands by the McAlester-Edwards Coal Co. In this case, the coal company obtained a mandamus to compel the Interior Department to accept the purchase price and issue to it patents to certain Indian lands. The Interior Department had sought to obtain a reappraisal of the value of these lands, but the effect of the court's action is to deny this opportunity, the court holding that the department was not entitled to secure a new appraisement.

TO DISCUSS ELEMENTS OF COOPERATION

W. A. GRIEVES, of the Jeffrey Manufacturing Company, Columbus, Ohio, National Chairman of the Division of Industrial Cooperation of The American Mining Congress, left on May 29th for California. While in Los Angeles and San Francisco, he will address the mining men upon the subject of industrial cooperation in the mining industry, appearing both at the meeting of the Chamber of Mines and Oil in Los Angeles on June 7th and the meeting of the Western Division Board of Governors, American Mining Congress, June 11th.

OIL SHALE NOTES

By VICTOR C. ALDERSON

The annual production of raw oil shale in Estonia since 1919 has been as follows: 1919, 10,602 tons; 1920, 50,684 tons; 1921, 63,417 tons; 1922, 147,235 tons.

Of the 1922 production, 85 percent was used as a raw fuel in Portland cement works and 11 percent on railways. Various industrial enterprises used 1 2/3 percent and private consumers 1 1/4 percent.

An Ohio corporation is planning to erect, about June, a retort in Kentucky

NOW IS THE TIME

"I have long thought that the labor question was one for the Mining Congress to take up, and now is the time to do so."

"Destroying unions will not settle it, nothing ever has been, or ever will be settled right by fighting."

"Capital and Labor must be fair and honest with each other, but, above all else, employers must get closer to their men and take a personal interest in them."—Wm. A. Remer, Asst. Secy. and Treas., Trojan Mining Company, Deadwood, S. D.

of a 150-ton daily capacity. The product is estimated at one-half a barrel of oil and 40 pounds of ammonium sulphate to the ton.

The N. T. U. Company has erected an experiment plant at Santa Maria, Cal., and after a 60-day continuous operation reports satisfactory results; i. e., a practical and workable process, a high percentage extraction, rapidity of throughput, and good quality of the resulting oil. After severe tests the oil has been found to be valuable as a flotation oil in metal recovery.

Records of the Glenwood, Colo., land office show that up to November, 1922, 25,091.82 acres of oil shale land in Colorado had been patented; that final receivers' certificates had been issued on 15,887.88 acres, and that applications were pending on 6,850.80 acres. Thus a total of 47,830.50 acres of oil shale land in Colorado have been patented or are on the way to patent.

The decision of the Department of the Interior to resurvey seven townships in Garfield County, Colorado, is important and timely. A resurvey is badly needed to establish correct boundary lines, avoid litigation and hasten patenting.

Tests on Transvaal (South African) oil shale by the Lamplough-Harper process in England gave 49.4 gallons to the ton. From the crude oil 40.34 percent of gasoline was obtained. This report is reported to be well adapted to the distillation of oil shale and satisfactory in the tests made.

CURRENT OIL SHALE BIBLIOGRAPHY

Alderson, Victor C.—Résumé of World Shale News, Mountain States Mineral Age, March, 1923, p. 25.

Barnwell, S. E.—Shale an Enterprise of Today, Mountain States Mineral Age, March, 1923, pp. 11-15. Current Oil Shale Bibliography, Mining Congress Journal, April, 1923, p. 122. Day of Shale Is Upon Us (Editorial), Mountain States Mineral Age, March, 1923, pp. 5-6.

DeBeque, Geo. R.—Present Status of Oil Shale Industry Demands Development of Shale Investment Safeguarded by Making Carbon Black, Railroad Red Book, April, 1923, pp. 503-505.

Gaffey, John.—Work Quarry Shale Beds First, Mountain States Mineral Age, March, 1923, p. 20.

Gavin, M. J.—Economic Importance of Shale, Mountain States Mineral Age, March, 1923, p. 16. The Chemistry of Oil Shale Distillation, Petroleum Times, London, March 17, 1923, pp. 393-394.

Ginet, J. H.—Shale Can Compete With Wells, Mountain States Mineral Age, March, 1923, p. 27.

Kerrick, L. C.—Effects of Temperature and Time of Reaction in Distilling Oil Shales on the Yields and Properties of the Crude Oils, U. S. Bureau of Mines, Reports of Investigation, Serial 2456. Temperature in Shale Refining, Oil News, April 5, 1923, pp. 32-33-38.

Goodwin, Ralph T.—The Organic Matter in Oil Shale, Industrial and Engineering Chemistry, April, 1923, pp. 343-349.

Newberry, J. B.—Retorting American Shale, Mountain States Mineral Age, March, 1923, pp. 19-20. Oil from South African Shale, Railroad Red Book, April, 1923, p. 507.

Prudhomme, Henry C.—New Type Multiple Retort, Mountain States Mineral Age, March, 1923, p. 9.

Reeves, John R.—The Oil Shale Industry With Respect to the Petroleum Situation, E. & M. Jo-Press, April 21, 1923, pp. 721-2.

Winchester, Dean E.—Oil Shale of the Rocky Mountain Region, U. S. G. S. Bulletin 729. None Too Soon to Start Now, Mining States Mineral Age, March, 1923, p. 23.

COAL MINING COURSE

A SHORT COURSE in coal mining, holding five weeks' instruction in practical operations, is being offered by the School of Mines, of the Pennsylvania State College, of which Dr. E. A. Holbrook, formerly of the Bureau of Mines, is dean.

The fact that the Pennsylvania State Department of Mines will give examinations for mine foremen and fire bosses at the end of this course is adding inducement. The course will open June 25.

SCOTCHING THE COAL LABOR DISPUTE

By GEORGE H. CUSHING

EXTENDING over more than a month, the attorneys for the General Committee of Bituminous Operators have, in briefs filed with the United States Coal Commissions, made strong accusations against the miners' union. The committee representing the union has replied in kind. With a little show of impatience, Mr. Marshall, a member of the commission, has said that these gentlemen were using the commission as a kicking post. The situation thus presented requires analysis if we are not to miss an opportunity to relieve the condition thus exposed.

The obvious fact is that the miners and operators are in a bitter quarrel. That is not unusual. Indeed, from the beginning, individuals have fought each other viciously. After that sort of thing had gone on for a long while, society became disgusted with the brutalities indulged in and insisted that if gentlemen would fight, they must be governed by rules and must have seconds who would see that the rules were observed.

RULES AND RECOGNITION

Also, from the beginning, men have fought by groups. After a long while, society, shocked by their brutalities insisted upon prescribing the rules for wars. Since the World War society has insisted that some power be created which is strong enough to compel combatants to recognize the rules of war.

Finally, from the beginning, employers and employees have fought over wages. The employes have so organized that a disagreement with an employer means the stoppage of his business. When these enforced stoppages of business occur, these two groups are in a state of war. Indeed, in one case, the miners' union has in open court claimed for its members the right to kill as an act of war.

Society becoming shocked by the brutalities of these struggles, insist that they too shall be conducted according to rule and that some power shall be exerted to see that the rules of war are obeyed.

As I see things the coal commission was created by Congress to prescribe rules for these wars. As I see the situation it is as follows: For thirty years the struggles between these two groups has been going on. The only change is that now it is being fought out before the commission instead of in the convention halls. Each side, naturally, is trying to justify its past and recent conduct. On no other theory can the violence of present statements be explained.

From the beginning until recently,

however, these disputes between employers and employees could proceed only to a certain point. When, in past, the patience of the employer became exhausted, he could resort to the summary dismissal of the contentious employee. That ancient privilege of the employer has been set at naught by the acquired strength of the unions. Also, the unions have now become so strong that they can dictate, with equal finality to the em-

ployees on the railways and in the coal mines.

When the battle was at its height—with all unions lined up, figuratively, behind the strikers and with all employers lined up, figuratively, behind the executives and operators—the representatives of the government "struck up the swords" and brought the battle to an inconclusive end. By that action nothing was accomplished; nothing was settled. Every situation remained exactly as it was before the fight started. Every issue then raised is still vital.

APPOINTMENT OF COMMISSION

The only change is that Congress set up a tribunal before which this bitter war shall be fought out. This commission is not a board of arbitration. On the contrary—if the language of the statute means anything—the commission is to prescribe the rules of future warfare and, if possible, devise some balance of power to protect the rights of non-combatants.

Thus Mr. Marshall and his fellow commissioners were appointed to sustain on behalf of the people the shock of the violent impact between these two groups. When the struggle has been so intense that combatants have been killed by the hundred and when non-combatants have been deprived of fuel through successive months, I feel that the commission escapes rather easily when it suffers no greater inconvenience than to have to read strongly-worded statements.

What all this means is that upon the coal commission is dumped not only the protracted dispute between miners and operators, but in essence the dispute between labor and capital. In the background, and only indifferently screened, is the question: What are we to do about continuing or terminating the payment of war wages?

If I understand the situation the commission must decide precisely what part the government is to play in this intense dispute. As I see it, the government can play only one of two parts, namely:

First—It can outline the rules of warfare to protect the non-combatants.

Second—It can reach a finding in favor of one combatant, and thereby take his place in the dispute.

That is, it can stay out and protect those who are now out or it can take over the industry and thus substitute itself for the present employer—with all that entails as to future disputes between workers and consumers.

The issue is so tremendous I do not believe it is out of place to discuss the real issue involved or to suggest those

things which, possibly, will modify the violence of the conflict.

After centuries of struggle between individual employers and employes, and after protracted efforts by both to solve these problems through organizations, we have finally settled down on an arrangement by which the workers are represented by unions, and the employers are represented by associations. Although these opposing groups are called by different names, they are identical in character and purpose.

The objectives of these two groups are as far apart as the poles.

The objective of the union is to be paid for time spent regardless of results produced in that time. The prevailing idea is that the results shall be an ever decreasing quantity delivered for a steadily increasing compensation.

Employers on the contrary want to pay for results regardless of the time taken to produce them. The aim in mind is a steadily increasing production at a steadily decreasing cost.

It is obvious that there is, and can be, no point at which these opposing views can naturally be harmonized. They are opposed in the root; naturally they are still opposed in the trunks and branches. That being true, it makes no difference how great an organization is created by either to force its will upon the other, they will still be opposed when the

atched organizations have become so big that a clash between them amounts to civil war.

ELEMENTS OF HARMONY

If the government leaves the issue unaltered and then tries to modify the conflict by inserting itself as a partisan or even as an arbitrator, it can do nothing more than to throw its great weight into the fighting ranks as the advocate of one theory and the opponent of the other. The vital point is that two theories as to compensation are in vital conflict. Organizations created solely to advocate and establish those opposed theories must of necessity be in equally vital conflict. Without first a harmonizing of the theories there can be no harmony between the organizations which espouse them.

But if we attempt to harmonize the theories by creating a new basis of compensation, we may have merely removed the cause of dispute within the industry to set up an equal dispute between the industry and its patrons. That is, by uniting the employer and the employe as the advocates of a new system of compensation we cause them to unite to pass the cost on to the consumers. Then we will have brought back exactly the same situation which, centuries ago, existed in Great Britain, when the employer and employe were joint members of a guild,

and when the population aligned itself in opposition to the guilds.

We have gone too far in civilization to repeat so obvious a mistake. We have advanced too far in intelligence to adopt a method which, hundreds of years ago, was by the experience of a great people, proved impractical. That leaves us under necessity to suggest a simpler way out.

I have herein suggested a method to which human society has resorted frequently when in an equal dilemma. That is, when men fought individually society prescribed the rules for duelling, and saw to it that the combatants had seconds. When men had fought for centuries by tribes, groups, and nations, and when these struggles became brutal, society insisted upon prescribing the rules of warfare and now insists upon creating a balance of power, sufficient to force the combatants to comply with the rules. In other words, society up to now has recognized the right of disputants to destroy each other, but has insisted that, when doing so, they should not transgress the rights of others.

QUESTION OF SAFE-GUARDING

Some may contend that this is evidence of lingering barbarism. The altruist will undoubtedly insist that no such right exists or should be recognized. Such a complete reformation assumes a reorganization of human society far beyond immediate possibilities. It presupposes such a violent revolution I do not consider it sufficiently near to the practical to warrant even passing recognition. On the contrary, and as a practical matter, I assume that we will continue to have groups disposed to destroy each other, and that society will continue to recognize the right of each group to visit destruction upon the other. Therefore I assume that the whole obligation of society is to prevent these conflicts from transgressing the rights of non-combatants. The question then is: What can be done to safeguard the non-combatants?"

The fundamental purpose of government is, of course, to protect the rights of the many from the violence of the few. Government was given power by its citizens solely to enable it to carry this general theory into effect. Therefore the powers of government being derived directly from its citizens, and being delegated for a specific purpose, are expected to be employed strictly in the interests of the majority.

It is pertinent and to the point that the powers of government have been, and are being, abundantly exercised to control, within bounds, the actions of the employers. In this connection these things are significant:

First—it has been made convenient for and attractive to the employers to

organize their businesses as corporations. These corporations when formed are creatures of the state. The state, therefore, having given life can take it away; the state holds over them the power of life and death. It can, if it wishes, cancel the charter of a corporation and can embarrass it in the conduct of its business.

Second—The state has drafted statutes against both monopolies and conspiracies. Under these statutes the individual states or the federal government can punish severely the employers who, by an unjust or arbitrary exercise of powers, attempt to impose their wills upon any part of the people.

THE FIRST RECOMMENDATION

My first recommendation is that this same principle should be employed uniformly. I believe the employes—let us phrase it bluntly, the unions—should be brought similarly under the power of the states or the federal government, or both.

Specifically, I see no good reason why the states should prohibit a monopoly of employers and, at the same time encourage, create or perpetuate a monopoly of employes. In detail, I see no reason why an individual state—as in the case of Pennsylvania, Ohio, Indiana and Illinois—should say by statute that no man may work as a practical miner in a coal mine unless he has first obtained a certificate of competency from the state, and should then put into the hands of the union full power to grant or deny a certificate to an applicant. Such statutes put in the hands of the union the right to exclude from that occupation any but members of its own organization. I cannot believe that the powers of government should in this way be loaned to any group to enable it to perpetuate a monopoly which it had previously won by open warfare—warfare against not only employers but the public as a whole.

My second recommendation has been, and is, that by a concert of action nationwide strikes should be outlawed and prevented in future.

MANY THINGS INVOLVED

The execution of this proposal involves, necessarily, many things. In the first place, a nation-wide strike is impossible, unless as a preliminary thereto, the representative of all workers, in any occupation shall group themselves in a single organization; shall assemble by representatives at a common point; shall agree upon common demands; shall insist upon their being granted; and then shall cease labor until those demands are granted. In that statement, in my opinion, I have drawn two definitions. Primarily, I have drawn a definition of a nation-wide strike. In reality

I have drawn a definition of a conspiracy. In other words, in my opinion, a nation-wide strike and a conspiracy against the people and the state are the same thing. The state obviously has a fixed obligation in such a situation. If the laws are specific against conspiracies they should be enforced; if they are not specific they should be made so—and then enforced.

In the second place without an open act of violence against the whole community a nation-wide strike cannot occur, unless all contracts, with all labor grouped in a union, expire simultaneously. Obviously all contracts cannot expire simultaneously unless they are drawn originally to expire on a common date.

If contracts are so drawn both the employers and the employees must be conscious of that fact when they are drawn. I hold that all contracts cannot be drawn to expire on a common date without the employers knowingly putting in the way of the employees the temptation to indulge in a nation-wide strike. I cannot believe that employers can successfully defend their conduct if they agree to common expiration dates for all labor contracts.

CONFRONTED BY FACTS

However, in the coal mining industry we are confronted by the fact of two nation-wide strikes already carried out.

We are confronted by the fact that all existing contracts are drawn to expire on the same date. Therefore, we are confronted by the possibility of other nation-wide strikes. And we are confronted equally by the insistence of the miners' union that this routine shall not be disturbed. They demand that common expiration dates which they won by patient effort—and hence that their power to call nation-wide strikes—shall be preserved. The operators, therefore, cannot break up this routine without meeting the violence of the miners' union. At that point, we must rely for a satisfactory outcome of this controversy upon the play of enlightened public opinion. I repeat, therefore, what I have said before. If the operators insist upon putting an end to nation-wide strikes by staggering the expiration dates of wage contracts; if in doing so, they are forced to endure a strike; and, if the people insist upon a premature settlement of that strike, the people have no right to complain if the resultant prices of coal are unduly and scandalously high.

My third recommendation is that a buffer district should be maintained in the coal industry—and in other industries—between the power of the union on one side and the safety of the people on the other.

I admit that this is essentially a private matter between the mine owners and their employees. It involves nothing

less than the sacred right of private contract. It may even involve the equally sacred right to organize for proper progress. It is a field to be entered carefully. Even the state governments cannot compel it. Surely it is far beyond the realm of the federal government. But it is not beyond the reach of enlightened public opinion.

In recent years a new line of thought has begun to find expression. It rests upon irresistible logic which runs somewhat to this effect:

Differences between employers and employes are inevitable. Agreements ultimately between them are, also, inevitable. If we have disagreements in the first place and agreements ultimately a compromise must be effected in some orderly fashion. That means arbitration.

In some industries, as in anthracite for example, the proposal is that the arbitrators shall be disinterested third parties. In other industries, as in the manufacturing plants of the International Harvester Company and the Jeffrey Manufacturing Company, the proposal is of a committee representing the employers and employees to reach this harmony by an understanding of all the facts.

Regardless of the personnel of the boards, the proposals are identical in that both assume a form of arbitration, which proceeds to the ultimate agreement without violence.



A MODERN MINING CAMP

The Louise Town Site, where workmen employed in the Louise Mine of the Consumers Fuel Company, Brooke County, West Virginia, enjoy ideal living conditions, has drawn representatives from several foreign countries who have come to the United States to study ideas and methods with a view of transplanting them to the European mining districts.

MINING INDUSTRY'S FUTURE IS ANALYZED

Address Delivered at Colorado School of Mines Graduation Exercises

By J. F. CALLBREATH
Secretary, American Mining Congress

THE WELFARE of the world is so closely associated with the work for which your training here has prepared you that I feel particularly grateful for an opportunity to point out to you some few of the principles which bear upon your work and some of the conditions toward which, as loyal citizens, your efforts will be made.

THE BACKGROUND FADES

We are so apt to take things for granted, to assume that the comforts and luxuries of life have always been available, that we lose sight of the struggle and privations which some one has suffered in order that civilization shall have progressed to its present state.

It has been my pleasure and privilege for the past fifteen years to live in the capital of the greatest nation in the world.

In that capital, among its many wonderful buildings, is one which stands as most beautiful in point of architecture, and most interesting, because it contains so much of the literature of the world—the Congressional Library.

In the rotunda of that building, among many other inscriptions, is this:

"We taste the spices of Arabia, yet never feel the scorching sun which brings them forth."

I refer to this in order to impress you with an appreciation of our debt to civilization, that you may understand the obligation resting upon you to do your part in preserving and defending that civilization which it is the plain duty of every citizen to perform. And what is the chief and the one necessary bulwark of civilization—government.

Civilization has advanced in proportion to the stability of governments which have brought quick punishment to wrong-doers, but have left the law-abiding citizen with fullest latitude and least restriction upon his effort; but government is more than law. It is more than an organization to punish wrong-doers. It is the agency which not only protects the individual in his rights, but fosters and protects the agencies through which comforts and luxuries are made available in proportion to our collective effort. From this standpoint government becomes the sublime expression of human cooperation.

Governments may be but the temporary utensils of the races. They may be made playthings by misguided mobs, who even with good intent may pull down the temple upon their own heads. Only as we appreciate the value of stable government can we hope that it shall endure. If we shirk our duty as citizens, if we stand idle while vicious minorities usurp authority, if we permit organized minorities, whether they be religious, industrial or political, to exercise a disproportional influence in governmental affairs—we are unworthy.

Ours is the most delicately responsive government in the world. Its elaborate machinery can be made to respond most quickly to the will of the majority of its citizens, as expressed by their representatives. If you allow a minority to make your nominations, or a minority to choose between candidates, you have surrendered your citizen's birthright, and yourself become responsible for the acts of that minority, no matter how vicious those acts may be.

But given a government that is stable and furnishes protection to the law-abiding, and punishment for wrong-doers, you still owe a duty that your representatives shall be kept informed of the intricacies of your business whenever legislation affecting it is under consideration. It is a common failing to criticize congress as either incompetent or untrustworthy. A senator or congressman is called upon to act upon bills affecting every phase of business. To perform his duty with complete personal understanding a congressman must know as much of each of thousands of kinds of enterprises as the specialists in each of those lines have been able to learn as a result of a lifetime of special effort—a thing which is entirely impossible.

To enable congress to function intelligently you must in some way get to its members the information which should be the basis of its action.

To do this each general line of industry must be so organized as to present the needs of that industry. It is manifestly impossible for each individual to personally present his cause, and it follows that given an efficient and representative government, we must also have efficient industrial organization in order that the voice of industry may translate itself into concrete benefit to our national progress. Until we have so presented our case, we have no right to say, as many do, that congress is incompetent, indifferent or corrupt.

Fifteen years of close contact with congress justifies me in the statement that congress intelligently and fairly represents the citizens of this nation—



THE GRADUATING CLASS, MEMBERS OF THE FACULTY, AND GUESTS AT THE GRADUA-

the greatest in the world; and that congress does the best that is possible at all times.

I can say without qualification that I have never presented any issue to the members of either house or senate which has not received careful consideration. The great success of the mining industry at Washington has been attained because we have asked only for those things which we believed to be for the benefit of the nation as a whole, upon the theory that no industry can permanently profit at the expense of others.

IN ACCORDANCE WITH SPIRIT

You have chosen a calling which has to do with a business the success of which is at the foundation of all prosperity. Modern day civilization cannot exist without the product of the mines. The richer deposits were made available by a kind providence when there was no science of mining. The need for mining engineers, their value to the world, their opportunities to render service, is proportioned to the difficulties of supplying the world with the mineral required by industry.

A prominent Colorado mining man whose judgment I sought as to what I might say to you today, said "Tell them how to go out and find a Premier the first year." I wish I might tell you that; but if I could, if it were easy to find a bonanza, bonanzas would soon be plentiful and become so commonplace as to lose their value. Pray not for bonanzas, but work for that skill and equipment which will enable you to beneficiate the available low-grade deposits to world service.

THE SERVICE OF SCIENCE

The progress of the world calls for increasingly scientific service, based upon the accomplishments of the past. You start where others finished.

"The dwarf on the dead giant's shoulders avails to see more
"Than the dead giant's eyesight availed to explore.

"And in Life's lengthened alphabet what used to be
"To our sires X Y Z, is to us A B C."

You are entering upon your life work at the most interesting period in world history. We sometimes hear individuals express regret that they were not born at an earlier time, before the possibilities of invention had been exhausted. There is no big thing yet to do, say these dull intellects, which always believe that opportunity lies elsewhere. One of the most instructive and interesting platform lecturers of this country is Dr. Russell H. Conway of Philadelphia. In his most popular lecture entitled "Acres of Diamonds" he gives many illustrations of dullards who left wonderful opportunities at home to seek similar opportunities elsewhere.

STILL GREATER DEVELOPMENTS

Instead of exhaustion of wonderful possibilities, the inventions and improvements of the past are but open doors to still greater and more marvelous future developments.

Dr. Steinmetz, the wizard of electricity, recently succeeded in making artificial lightning. "What's the use?" asks the dullard; "Nature does that with too great frequency." If we are to learn the method by which this startling and terrific force of nature is to be controlled, we must be in position to study it in action. Dr. Steinmetz produces the phenomena, measures its force, and develops methods of control. And this stupendous force, which perhaps more than any in nature strikes fear to the human heart, seen by the light of these experiments is very simple. Dr. Steinmetz tells us that: "The electricity in a cloud which can hurl a thousand bolts is worth just ten dollars. Each bolt from such a cloud is equivalent to 600,000,000 horsepower for two-millionth of a second, which is 1,200 horsepower for a second; 20 horsepower for a minute, or one-third of a horsepower for an hour."

It is rather startling to know that a lit-

tle 10 horsepower motor in two minutes' operation can develop power equal to the lightning crash which stuns and stupefies, and destroys everything in its path.

We have marked the wonderful developments of automobile and airplane, made possible by the use of internal combustion engines; the power which will be created when we are able to separate the atom into its constituent parts. Almost without limit might we find illustration of wonderful possibilities in the field of invention; but invention is but one of many fields in which success may be looked for. In art, in letters, in the various sciences, in commerce, in manufacturing, and perhaps more than all in the particular field which you have chosen and for which your training here has prepared you—mining and metallurgy.

I have tried to picture to you the wonderful possibilities which lie just ahead, and to show that conditions have been created which make for easy success in many lines of mining; but all success in business will be measured by the profit which it earns.

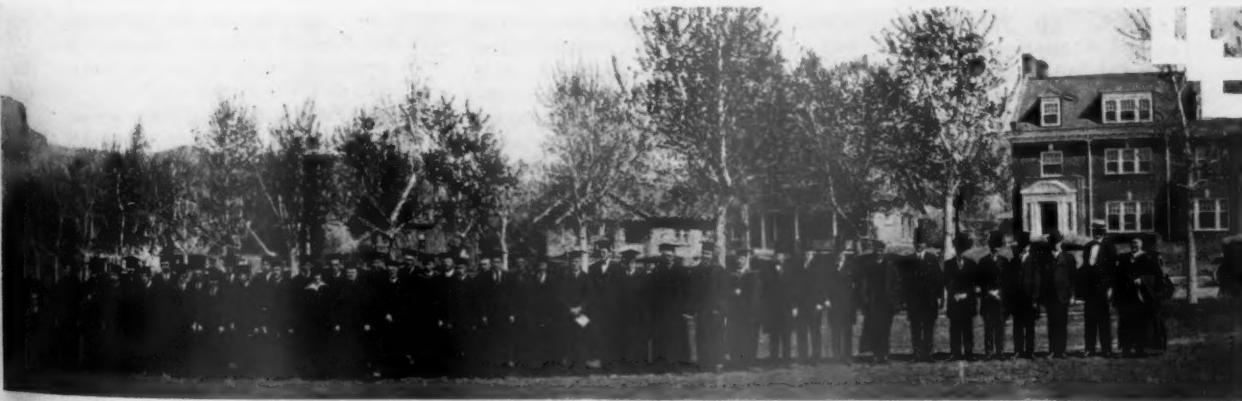
CONTACT WITH ECONOMIC LAWS

You will in all lines of endeavor be forced to deal with economic laws which may make success difficult.

The law of supply and demand, no matter how successfully we may evade it temporarily, will in the end control.

There are two important branches of mining in which the future is not at all promising. The production of gold in the United States for the year 1915 was approximately \$101,000,000. Last year this production was below \$50,000. The burden upon gold production, caused by increasing costs, while the value of the product remains fixed, is now being intensified by a gradual upward trend of prices, as a part of what seems to be a new period of inflation.

At the close of the war it was hoped that prices might generally fall, not to pre-war levels but somewhere between



GRADUATING EXERCISES OF THE COLORADO SCHOOL OF MINES, GOLDEN, COLORADO, MAY 18

pre-war levels and war-peak prices. It must be understood that wages make up approximately 75 percent of the total price paid by consumers for commodities, and therefore, that a high wage level must necessarily translate itself into high-priced commodities.

The effort to deflate railroad wages was only partially successful, and the effort to deflate coal mining wages was entirely without result. It will be seen that in any country there must be a comparative level of prices, and that men will not be willing to work in metal mines when coal miner's wages are nearly double. The net result has been to hold in the coal mining industry approximately 750,000 men, who work less than two-thirds of the time. This surplus of a quarter of a million men in coal mines now held by temporary violation of the law of supply and demand, should be made available for other lines of effort.

A CONTINUOUS BURDEN

This holding up of price levels by artificial means, this interference with the law of supply and demand, is a continuous burden upon gold production, and until some remedy is devised, gold mining must be a waning industry.

In the production of silver we are also facing the end of the purchasing power of the Pittman Silver Purchase Act, and within a few months the silver production of this country may be thrown upon the world market, already well supplied, and an increase of the world's price of silver cannot be expected unless there shall be increased markets found for silver.

Under the Nicholson resolution a commission has been provided to investigate world silver conditions, in the hope that those countries which are doing business entirely with paper money may realize the advantage of a metallic base for their currency.

During the war the price of silver for a considerable period was above its value in coinage, and silver practically disappeared in Austria, Belgium, Czechoslovakia, Finland, France, Germany, Greece, Hungary, Italy, Jugoslavia, Poland, Portugal, Roumania, Russia and Turkey. In Great Britain silver coinage was debased from 925 to 500 fine, in order to protect its coinage from being melted into bullion. A number of other countries followed the example of Great Britain, and as a result the demand for silver for coinage purposes has been very greatly reduced.

The United States today holds more than 50 percent of the world's metallic gold reserves. It is evident that with the largely increased credits, and the higher price levels, that a large amount of metal is required to form the basis of credit upon which these national currencies may be stabilized.

From the beginning of time gold and silver have been recognized by the world as money metals. Today more than 70 millions of people use silver exclusively as the basis of credit. It seems evident that with the scarcity of gold that silver must necessarily become the basis of credit in those foreign nations which cannot obtain gold, and that no greater service can be rendered to those countries than to show them the way to stabilize their currencies by the use of silver.

The present outlook for gold and silver mining is very discouraging. The future in these industries, and the future of world happiness and prosperity, are so closely related that the problem of stabilizing world currencies is one which calls for the exercise of the most profound statesmanship, and for your active cooperation.

As you assume the responsibilities of your profession your effort may be applied with great advantage in bringing about more sympathetic relations between employer and employee. The waste caused by the efforts of wage-earners to better their condition as manifested by industrial strikes, is a problem which will command your attention. There is no problem more difficult of solution than that of making a proper division of the earnings of labor and capital; but it is plain that where labor and capital work together, the best results will be obtained by both. The law of supply and demand will necessarily be considered in the settlement of these problems. With a shortage of production, market prices rise; with a shortage of labor, wages must increase.

A PECULIAR SITUATION

We are confronted in the productive world today with a peculiar condition. During the four years preceding the war this country received each year approximately 900,000 immigrants. Approximately one-half of these were laborers, 250,000 going to the farms, 180,000 being skilled laborers, and 22,000 common laborers. During the war immigration was so reduced that the productive machinery of the nation as compared with pre-war additions through immigration, was short approximately 1,356,000,000 days' labor. During the same period 3,705,463 enlisted men were out of productive service for approximately three years, making a loss of 3,365,000,000 days' labor. At the end of the war, then, we find the production of the United States short of what might have been produced by a total of 4,721,000,000 days' labor.

In the face of this startling situation the problem of meeting the nation's requirements for metals will call for your best efforts as mining engineers.

There is no profession, no calling, in which more delicate integrity is essential than that of a mining engineer. The mistakes of most professions are shortly known. The mining engineer gives advice to clients often thousands of miles away, the correctness of which may not be known for years, and perhaps never. Under these conditions the desire to do right must come from the heart rather than from necessity.

You operate at the foundation of all modern industry. Your basis of integrity and efficiency should set the world pace. Without the product of mining the world's industries would stop. To you are given opportunities given to no others since the creation of the world. You will be expected to accomplish in a given space of time more than has ever before been accomplished, because you have better tools, better facilities and better surroundings, than have ever before existed. You are expected to be not a dwarf on the dead giant's shoulders, but a giant on the dead giant's shoulders.

A STRIKING ILLUSTRATION

This thought is made almost startling by a comparison made by James H. Robinson in *The New History*:

"In order to understand the light which the discovery of the vast age of mankind casts on our present position, our relation to the past, our hopes for the future * * * let us imagine the whole history of mankind were crowded into twelve hours and we are living at noon of the long human day * * *. For over eleven and one-half hours there is nothing to record. We know of no persons or events; we only infer that man was on earth, for we find his stone tools, bits of his pottery, and some of his pictures of mammoth and bison. At twenty minutes before twelve the earliest vestiges of Egyptian and Babylonian civilization begin to appear. The Greek literature and philosophy to which we owe so much are not seven minutes old. At one minute before twelve Lord Bacon wrote his 'Advancement of Learning,' and not one-half a minute has elapsed since man first began to use the steam engine to do his work for him."

To you then, with the world's accomplishments as your tools, with the knowledge that one year now is, in point of accomplishment as thousands of years of the dim past, in the face of the growing needs of the world, to you is given greater opportunities, greater possibilities, and at the same time greater duties and responsibilities. Integrity and industry are the keys which will enable you to accomplish what the world expects of you, what Colorado expects of you, what your Alma Mater, the Colorado School of Mines, expects of you.

A Series of Scrutinies Directed Toward Current Events

IN WASHINGTON TOWN



By

IRA L. SMITH



THE NORTHERN areas suddenly are coming in for large slices of public attention.

First, Doc Cook turns the mind back to gumdrops and north poles and things like that by bobbing up in the role of an oil magnate. And then President Hard-



ing announces he is going up around where the Roaring Bory Alice hangs out.

A COLD-BLOODED BIRD

Personally, I've got cold feet and don't care for cold climates. But I always get rather interested in figuring out why folks charge off to the chilly clime where icicles drape themselves from moustaches.

The only personal contact I ever had with anybody that came down from Jack Frost's home state was when my brother-in-law visited us once and pulled out from over his heart the picture of a seal on snowshoes and said it was his playmate of the north, or words to same effect. That didn't bother me much.

But when the President and a generous helping of the Cabinet invest in woolen socks, I start perking up and wondering what's going on at the top of the world.

NOT So Good

The highest-ups in Washington have been getting more and more hep of recent date to the fact that things haven't been doing so well up in Alaska for these many days. They tell me that place would be almost as big as the United States if it wasn't flattened out on the map, and it's got scads of minerals and things, and still folks have left to take up running a grocery in Paducah, Ky., and things like that.

As I get the drift, the main jumble up there is due to the fact that there are more government bureaus stepping on

each other's toes in handling Alaska's affairs than there are relatives at the reading of a rich uncle's will. Naturally enough, as my maiden aunt used to have a way of saying, they can't all get what they want, so the works are grandly gummed.

Now some time back, as I get the dirt, the administration figured that something had to be done and so it stepped into the government reorganization plan with the idea of cutting off some of the overlappings. But things didn't get much farther, apparently, than a centipede with bunions on every foot. The idea being that folks by and large haven't got the low-down and there isn't much that steps along in the long run in such things but what is pushed on its way by that rather ethereal force called public opinion, or something like it.

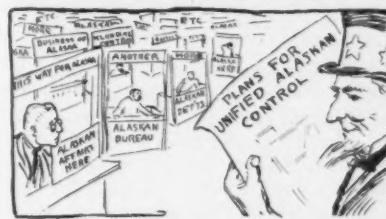
So, seeing's as how something has to be done about it, like the sheriff said when the pie was stolen at the picnic, the President and some of the cabinet caliphs are going to step out for points north. There aren't many of the folks losing sight of an aggregation that measures up so high in the affairs of this our nation as that party that's setting out to say hello to the midnight sun or moon or whatever it is. The spotlight is bound to follow them. And when they get back the folks generally will have a heap sight better idea of what is what up in Alaska and what has to be done than they had before.

A PHILOSOPHICAL UNCLE

As my old uncle used to say, there isn't anything like having folks under-

basking in more of the light of understanding than has been around it. Solutions will come romping out into the brightness, begging to be grabbed.

There is some chatter about rigging up a single government department to



take care of the affairs d' Alaska, pardoning the slander on French. Whether this will be done is one of the developments that will pop its head up later on. Forgetting all other arguments, pro and con, on this idea, it certainly will be a big help in keeping the governor of Alaska in shoes. Scott Bone, boss of the territory, came to Washington a few months ago, and started out to see officials in the thirty-five different government departments and bureaus that have something or another to do, all thirty-five of them, with Alaska's affairs under the present system. Scott liked to never got around to see them all.

NO! NOT THIS!

So, at the risk of incurring the displeasure of the leather moguls of Brockton and vicinity, I say it would be a good idea to get Alaska's administration centered in a handful of bureaus at least, because with government officials in danger of trotting around on their uppers from having to pace back and forth between thirty-five bureaus, action must be taken to keep proper dignity from going out in the back yard and tossing ashes in its whiskers.

But smiting bureaucracy is only the part of it, dearie, so far as getting Alaska out of the doldrums is concerned. Rolled into the job are the tasks of colonization, peering for minerals, letting notches out of strangling mining laws, doping out transportation quandries, not to jabber about a flock of others.

After these little matters are attended to, Alaska will be able to powder her nose and step out in style on the road to prosperity.



stand you when you are going to start into something and need their support.

So when the walruses are left to their lonesome selves after the distinguished tourists return to the land of amateur winters, it is seven distinct kinds of a cinch that the Alaskan muddle will be

INDUSTRIAL RELATIONS LOOM IN LEGISLATION

Flood of Proposed Measures Introduced in Last Congress to Deal With Contacts Between Elements of Industry—Small Number Enacted—Many Sprang Merely from Demagogic Sources

By E. H. PULLMAN
American Mining Congress Staff

PERCEPTIVE MINDS throughout the country are viewing necessity of reducing the friction in industrial relations in the light of tremendous importance as concerns the welfare of the nation. No exaggeration is employed when the statement is made that a greater economic loss is resulting from this friction than from any other cause.

Naturally enough, with the question coming into more and more prominence, the national capital is hearing the plea for harmony arising from industrial centers in increasing volume. Nor is this plea of a sudden birth. Its measure has been building up over a period of years marked by the abnormal conditions prevailing since class-consciousness first seized with a vengeance upon the various elements in the industrial realm.

THE BEST GAUGE

Regardless of what degree of current public thought is reflected in the moment by legislative action in Washington, it must be admitted that the bills introduced in Congress form the best gauge for estimating the maneuverings of the mass mind when taken over a stretch of time.

Thus it becomes of real interest to note that during the period covered by the last five Congresses, the number of bills concerning capital and labor in their industrial relations introduced in the Senate and the House has increased by more than three fold. In other words, three times the number of measures concerning the subject came before the attention of the last Congress as compared with the number that were introduced by the legislators fifteen years ago.

Close observers have ventured the opinion that legislators known as "self-seekers" have been mainly responsible for this large increase. This means that the solons who professionally watch for the quirks of the public mind and capitalize them post haste by introducing measures of one form or another to draw the limelight, are for the most part the authors of the more recent proposals dealing with industrial relations. Some sort of substantiality for these deductions is offered in the fact that comparatively few of the measures have moved through to the point of being enacted.

To some degree, it is obvious the

political churnings of recent times have given individual legislators a freedom to indulge in individual impulses that could not exist under the old order of things when leaders were leaders in far more than the present meaning of the word so far as work on the floors of the two houses of Congress is concerned.

With strikes of intensity handicapping various basic industries with some regularity during the past four or five years, the legislators have busily contrived proposals to investigate causes and even to provide against strikes. Some of the

AN IMPRESSIVE TONE

"The plan of the Division of Industrial Cooperation of the Mining Congress is a most excellent one. It has long seemed to me that something of this kind was just what the Mining Congress most needed, and the tone and spirit of the platform for the proposed new division impresses me most favorably."—F. G. Cottrell, Fixed Nitrogen Research Laboratory, U. S. Department of Agriculture, Washington, D. C.

investigational proposals have been enacted, but the anti-strike bills so far have found the way too rocky.

Of the 20,000 bills introduced during the last Congress more than 300 measures dealt with phases of the subject of industrial relations. Few, however, were enacted.

Of those which were passed the most conspicuous was the law authorizing an investigation of the coal industry by a coal commission, which will cover wages and earnings of miners, together with information as to their living conditions and the standardization of wages and living conditions. This commission was authorized to seek a basis for settlement of the perennial disputes between the miners and operators in the coal fields.

Its authorization followed the introduction of at least 50 bills on the coal and miners' wage questions, but the bill as finally passed was an administration measure drafted by the House Committee on Interstate Commerce and the Senate Committee on Labor.

Other coal proposals dealing with the question of industrial relations which were before the last Congress included at least ten bills proposing government operation of mines in strikes; at least six bills making appropriation of several hundred thousand dollars to relieve distress among unemployed coal miners; investigation of wage agreements in the coal industry; investigation of the coal strike, which was conducted by the House Committee on Labor; bills proposing seasonal rates on coal to provide steady employment of miners, which were debated in the Senate but sent back to committee; investigation of miners wages; establishment of a national coal mining board of nine members to settle disputes; bills providing for a federal coal commission to consider all phases of the coal industry, including the relations of miners and employers; an amendment to the Constitution to give Congress power to regulate production and commerce in coal; establishing a board composed of representatives of the coal industry, miners and the public for the adjustment of disputes in the coal industry, and an investigation of strikes in West Virginia by the Senate Committee on Labor, which submitted recommendations that were not acted on by Congress.

Proposed anti-strike legislation originated in the Esch-Cummins transportation act of 1920 but was eliminated from that law. In successive years the proposal was renewed in several bills providing penalties for interference with agencies of commerce and for destruction of trains or other railroad property.

INSPIRED BY STRIKES

Other industrial relations proposals which developed as a result of the railroad and the coal strikes included the following: Creation of a federal court of conciliation of three judges to decide industrial disputes; to forbid aliens from voting or participating in the management of labor unions; for the organization of national labor unions under the Department of Labor to enroll workers, unions and employers, to subject the unions to suit for violation of law, and to restrain them from interference with commerce; creation of a railroad adjustment board of five members to settle labor disputes; settlement of labor dis-

putes by a system of conciliation; adjustment of railroad wages by a federal board, and to deport aliens participating in riots.

Measures looking to the control of labor during the war were also proposed, including the following: Authorizing the President to assume control over industrial organizations in war; government control of workers during war, and conscription of citizens for military and industrial service in war.

A dozen bills were introduced to abolish the Railroad Labor Board, and other bills were introduced to transfer from that board to the Interstate Commerce Commission the matter of fixing railroad labor wages.

LABOR SOUGHT MEASURES

The injunctions obtained by the government in the 1919 coal strike and the 1922 railroad strike spurred labor to seek legislation to prevent the issuance of injunctions against labor organizations. Labor was successful in securing the adoption of an amendment to the Department of Justice appropriation bill forbidding the expenditure of funds for anti-trust prosecution in cases against labor organizations, but this applies only for the year ending June 30, 1924, as these appropriations are made annually by Congress.

Bills were introduced to prevent labor organizations from prosecution under the Clayton act of 1914, and to prevent issuance of injunctions against labor organizations.

The unemployment situation prompted the introduction of bills designed to equalize employment. These measures proposed the creation of a commission to investigate unemployment; construction of public works to relieve unemployment, and prevention of unemployment by preparing for periods of depression in the form of suspending public works during periods of excessive employment and speeding up of construction during periods of unemployment.

Fully 50 bills were introduced proposing constitutional amendments to forbid the employment of child labor. These included proposals to levy a tax of \$2 per day on persons under 16 employed in mining, and to prohibit commerce in articles made by child labor. The House and Senate Judiciary Committees reported resolutions proposing a constitutional amendment forbidding child labor, but they were not considered by either House.

Investigation of labor conditions other than those in the mining industry were also proposed, including an inquiry into labor conditions in Cuba, and the cotton industry in New England.

WAR MINERALS CASES RECEIVE ACTION

THE UNEXPENDED balance of the War Minerals Relief Fund is reported as \$2,228,023.98. One thousand four claims were filed for rehearing under the act as amended November, 1921. Of these 459 have been settled, 290 receiving awards and 169 being disallowed, leaving 545 to be acted upon. The work of the War Minerals Relief Commission will be expedited during the coming months and completed by the 1st of January, 1924, according to an announcement made by Secretary of the Interior Work.

Listed below are the claims which have been acted upon by the War Minerals Relief Commission and the Secretary of the Interior during the April 21 to May 14, 1923, period.

RECOMMENDATIONS FOR AWARDS (Approved by the Secretary.)

Grasselli Chemical Co., Cleveland, Ohio, \$44,244.05; the Marietta Mining Co., Lewisburg, Tenn., \$40,738.96; Holbrook & McGuire, San Francisco, Cal., \$12,130.42; the Matchless Tungsten Mining Co., Denver, Colo., \$4,367.94; the Davenport & Des Moines Leasing Co., Boulder County, Colo., \$3,615.51; E. B. Hill, Boulder, Colo., \$3,311.56; Charles A. Wilson, Shasta County, Cal., \$2,994; Irene M. Furlong, Denver, Colo., \$2,924.81; Sam Craig, Sugar Loaf, Colo., \$2,408.60; Western Ores Co., Oakland, Cal., \$1,388.87; William E. Ross, Bluefield Manganese Co., \$870.13; O. F. Peterson & J. M. Whitesides, Sugar Loaf, Colo., \$631.61; I. H. Davis, Deadwood, S. D., \$624.56; Husler & Wachter, Placerville, Cal., \$594.24; J. W. Ball, Oakdale, Cal., \$454.79; Bert Hammel, Fresno, Cal., \$400; Robert W. Weldon, Watts Valley, Cal., \$241.

(Pending with Secretary)

Stange Mining Co., \$58,982.86; John A. Jenson, Louis Moen & John Toot, Sugar Loaf, Colo., \$1,630.25; Edwin C. Payne & Robert E. Thomas, Nederland, Colo., \$1,421.94; J. F. McKnight, Eureka, Cal., \$900; Lee Gray, Colfax, Cal., \$123.60.

RECOMMENDATIONS FOR DISALLOWANCE

Old Manganese Field Mining Assoc., expenditures for purchase of property and promoting purposes; John Bouse, Berkeley, Cal., not of commercial importance; J. N. Lotspeich, Morristown, Tenn., no actual mining operations; Shady Manganese Co., expenditures for purchase of property (claim withdrawn); Mammoth Mining Co., Lynchburg, Va., not of commercial importance; Fred H. Nett, San Bernardino, Cal., stimulation established subsequent to losses; Charles D. Ammon & Charles Burnett, David City, Nebr., and St. Louis, Mo., no actual mining operations.

PUBLICITY IS HIGHLY IMPORTANT MEANS

WITH PUBLICITY obviously standing as one of the most important means toward the end of accomplishing the success of the industrial cooperation movement, N. H. Coolidge, of Coolidge and Hight, Boston, Mass., discussed the experiences of coal industry in his remarks before the Industrial Cooperation Conference at New York.

Taking up the discussion of the subject as initiated by Lawrence F. Abbott, Mr. Coolidge declared: "Advertising is not read, therefore there is no good in the advertising."

POSITION OF OPERATORS

"The coal operators have no occasion, legitimately, to advertise in the daily newspapers, he continued. "Daily newspapers get their advertising largely from department stores, or from those who have something to sell to the public. Coal operators have nothing to sell to the public. They sell to coal dealers or to manufacturers, and the manufacturer as a rule has nothing to advertise in the daily papers. The coal operators advertise in the coal papers."

"What you have to do is to impress upon the coal consumer, namely, the manufacturer, and the department store that buys your coal, that this question of massacres of West Virginia, the insurrections of United Mine Workers is highway robbery, is a matter of importance to them unless they want to have freezing and starvation at any minute at the command of John L. Lewis, who is now abroad, as the papers say, endeavoring to find out whether he can make a combination that the next time they have a strike there, there shall be no coal shipped in because he will have that kind of a combination."

SHOULD BROADCAST FACT

Concretely, the idea is that the money appropriated for the prosecution under the Sherman Act for monopoly shall be expended in the prosecution of employers, but that none of it shall be expended in the prosecution of employees. That labor unions are exempt is one of the things that the people here that have occasion to advertise in the papers or in the magazines should get their consumers to get at the newspapers. If the large department stores could get impressed that this was of some importance to them, all they would have to do would be go to the editor and say: "Here, it is important that we have some of this and other stuff that Mr. Callbreath will send to you on the first page of the newspapers."

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INVESTIGATION OF MINE FREIGHT RATES IS NEEDED

No General Study Made Since Horizontal Increases to Determine if Inequalities Exist—Neither Reductions by Interstate Commerce Commission nor Carriers' Voluntary Action Have Eliminated Discrepancies

By McK. W. KRIEGL
American Mining Congress Staff

SINCE THE horizontal increases in freight rates became effective, the last in August, 1920, the reasonableness of the rates on mine and smelter products from particular districts has been passed upon by the Interstate Commerce Commission in several cases, but no general investigation of these rates has been made for the purpose of determining to what extent, if any, rates on mine and smelter products are out of line as the result of the increases by flat percentages. Neither the reductions made by the Commission nor the voluntary reductions made by the carriers in certain instances have eliminated the inequalities which were introduced into the rate structure.

COMMERCIAL CONDITIONS RECOGNIZED

In a report on rates applicable to smelter products from Northport, Washington and Kellogg, Idaho, to destinations on and east of the Missouri River, in which the Anaconda Copper Mining Company was the principal complainant, the Commission held that these rates should not be higher than those contemporaneously maintained on the same commodities from Montana and Utah smelting points to the same destinations. In reaching this decision commercial conditions were recognized as a controlling factor.

The carriers contended that the influence of commercial competition should not be considered of greater importance than transportation conditions, but the report states that comparatively few rates are made by the carriers, or reviewed by the Commission, from the standpoint strictly of transportation conditions. Commissioner Potter dissented on the ground that it is not within the province of the Commission to equalize commercial or economic conditions and make rate adjustments which will offset natural advantages of one producing territory over another, and this view was concurred in by Commissioner Eastman.

In this case the Commission considered the character of smelter products from the standpoint of traffic desirability, their loading in excess of the marked capacity of the car, their origin in a common and restricted source of raw material, the desirability of maintaining and further developing the out-

put of the district involved, the long haul on the traffic, and the general tendency toward extensive groupings of many commodities for long hauls in general. These are factors which apply with equal force in the consideration of rates which apply from other mining districts. The case of Adriatic Mining Company and others, involving rates on iron ore from mines in Minnesota and Michigan to ports on Lake Superior and Lake Michigan, also brought about material reductions in certain rates. The Commission held in effect, however, that reductions in rates which were established under emergency conditions during the war are justified only to the same extent that enhanced operating costs have been reduced.

GENERAL LEVEL HIGHER

It is stated in the report that as a result of general increases and reductions since June 24, 1918, the general level of rates in western territory is 52 percent higher than it was on the date mentioned, while the net increase in the ore rates from the Minnesota ranges during the same period has been but 44 percent, and that the cut in these rates ordered on July 1, 1922, seems to have been fairly proportionate to the decreased costs of operation.

Although this conclusion may have been proper insofar as the Minnesota iron ore rates are concerned, it is questionable whether such a conclusion may justly be reached in the consideration of rates applicable to mine products in general. The inequalities which resulted from the flat percentage increase under general order No. 28 have not been corrected by subsequent readjustments except in those instances where the carriers have voluntarily reduced particular rates. And where inequalities exist they should be removed irrespective of any consideration of inflated operating costs.

The Commission pointed out that Congress in enacting section 15a of the interstate commerce act, directing that rates should be so fixed as to give the carriers as a whole a fair return on the aggregate value of their railway property, recognized the right of individual carriers to earnings in excess of that return in permitting them to retain one-half of their excess income above 6 percent. The cost-of-service principle in

rate making was not considered to be a controlling element in determining the propriety and reasonableness of the Minnesota iron ore rates.

"UNDENIABLY AMONG LOWEST"

In commenting upon the relationship of ore rates to rates on other commodities, the Commission stated that "viewed from the standpoint of quantum alone, the ore rates are undeniably among the lowest rates in the country in comparison with those on other low-grade commodities." It will be difficult, however, for shippers of ore to understand just what bearing this has upon the determination of reasonableness. It would seem entirely proper, considering the transportation conditions and other considerations peculiar to ore traffic, that such traffic should take relatively low rates, especially as the active mining operations necessary to produce the enormous volume of traffic furnished by products of mines, is a necessary stimulant for other classes of traffic taking higher rates.

The prosperity of many of the carriers depends very largely upon the continuity of the volume of traffic received from the mines and smelters and the inbound traffic to destinations in the mining districts. When this traffic is depressed because of market conditions, strikes or for any other cause and there follows a sharp increase in operating costs per ton, due to the abnormally small tonnage, the situation of the carriers can not be improved by increasing rates on the theory that the loss in operating revenue can be made up in that way. The tendency is to further depress and stifle the traffic.

The efforts which have been made in the past to establish scientific principles of rate making, in some respects have been beneficial; but seemingly there has been a tendency to arbitrarily select certain principles as controlling in some cases while rejecting or ignoring them in others. Then, too, it must be remembered that products of mines are affected by market and economic conditions to a greater extent than other classes of traffic and therefore require the application of different principles in the adjustment of transportation rates.

It is not inconceivable that under certain conditions the carriers would be

justified in fixing rates on mine products at a level which would barely cover cost of service, where such action might become necessary in order to keep the mines open. The nature of the traffic as well as the negligible risk involved in shipment and the low cost of handling, and the importance of other traffic induced by active mining operations, justify low rates on all raw mine products, and, if enhanced operating costs required increased revenues, to a degree might justify increased rates on other traffic without corresponding increases in the rates on mine products.

The mining industry has not, as a unit, placed its case before the Interstate Commerce Commission. Lumber producers have combined on rate questions and have secured advantages which otherwise might not have been obtained. Agricultural organizations have fought their rate problems through to a more or less successful conclusion and are still at work to secure further advantages and further reductions. Manufacturing concerns bring their important general complaints before the Commission through their national organizations. Fruit dealers and merchants of all classes have accomplished excellent results through united action. Whether or not the community of interest between the different branches of the mining industry is such that these branches could act as an entity in demanding a general examination and readjustment of rates remains to be determined.

ALABAMA COAL LEASE

THE FIRST application for a coal lease on public lands in the state of Alabama has been made to the Department of the Interior, affecting 1,840 acres of land located near Carbon Hill, Fayette county.

Application for the lease has been made by a coal company of Memphis, Tenn. Should this company be the successful bidder it agrees to pay to the federal government a royalty of 10 cents per ton mine run of coal produced, guaranteeing a production of 20,000 tons per annum beginning with the fourth year and obligating itself to invest \$25,000 per year during each of the first three years in coal production plant and equipment.

The coal-leasing privilege on this land will be sold by the Interior Department under the above conditions some time in June to the bidder offering the highest cash bonus at public auction at the land office at Montgomery, Ala. The exact date of this auction will be announced within the near future.

REMOVAL OF INJUSTICES IS PRIME AIM

J. F. Callbreath Shows Virtues of Demand Stand as Assurance of Movement's Success—Intimate Contacts Planned in Various Districts

J. F. CALLBREATH, secretary, American Mining Congress, in addressing the industrial cooperation conference in New York, pointed out that the industrial cooperation movement well may find all the necessary promise of success in the quotation from an English historian that "every agitation that lives, thrives and becomes formidable only by virtue of that which is just in its demand." Applying this statement to the immediate situation, Mr. Callbreath said: "If we may therefore by a more complete understanding remove injustices, we shall have gone a long way towards this industrial peace which is an essential to this nation's prosperity.

MOTIVES EQUALLY ALTRUISTIC

"We believe that the average workman by himself is animated by altruistic motives equal to ours; that if his condition can receive fair treatment without joining with those who are wrong we may hope for his cooperation."

Mr. Callbreath, in outlining the plan under which the work will be carried forward stated that the industrial cooperation division of the American Mining Congress will not seek as an entity to establish direct contact with "the labor people."

"Our business," he said, "is to arrange to carry the different plans to the operators in the various states of the country, so each state or community may establish its own connection with its own labor, because it is only such mutual relationship or confidence that will bring results."

PUBLICITY AS A POWER

"We as a Mining Congress are ready to do your bidding. We believe this doctrine, if carried successfully as shown upon the little chart—and we have only twenty-two states organized as yet—we expect to have every state organized, and if we may add to the organization of those in the business, those who are connected with the publicity agencies of the state, we believe we may carry to the people who ought to know the fundamental principles that we as employers are anxious to establish relations which will be for the intense benefit of every line and department of industry."

Proceeding further into the discussion of publicity, Mr. Callbreath said:

"Our difficulty has been that we have told our story to each other. I have in hand an editorial from an employers' paper which states that union labor as represented by the American Federation of Labor, the Railway Brotherhoods,

publish and distribute 4,300,000 publications each month carrying union propaganda. The same employers' organization publishes and circulates, principally among themselves, only 100 copies per month of periodicals devoted to the main problem of industrial relationship.

THE WORKMAN'S NEED

"From the standpoint of the American Mining Congress we are ready to do everything you give us the power to do, and it is in your hands to furnish the power, to give us your support to enable us to work.

"There is no one thing so important to our substantial prosperity; there is no one thing that will give such peace and prosperity to the employer, nothing that will do so much for the laboring man than for him to understand that out of the total of production comes his necessities and luxuries because an over-supplied market means lower prices and an under-supplied market means higher prices. What he needs is not so much a fair wage, but good living conditions and such a wage that will enable him to make some saving to provide for his family and comfort.

"The American Mining Congress is an altruistic organization. We have no direct interest in any of these things. To you gentlemen who employ labor who conduct large lines of business that is not altruism at all; it is plain business sense, that you shall establish with your employes those relations which will bring to you contented workmen, increase their production, reduced costs, lower costs, satisfied public, loyal employes, efficient management.

NEW STATION'S HEAD IS APPOINTED

D. R. OLIVER BOWLES, mineral technologist of the Bureau of Mines, has been designated by the Secretary of the Interior as superintendent of the new mining experiment station of the bureau to be established at Rutgers College, New Brunswick, N. J., and which will specialize in problems involved in the production and utilization of the various non-metallic minerals. Dr. Bowles will enter upon his new duties July 1.

The new station will undertake selected problems in mining, treatment of non-ceramic uses of such non-metallic minerals as bauxite, feldspar, Fuller's earth, graphite, gypsum, limestone, mica, phosphate rock, salt, sand and gravel, slate, sulphur, garnet, asbestos and talc.

CURRENT GOVERNMENT REPORTS

**Bureau of Mines**

The separation, transportation and combustion of powdered coal; the causes and means of prevention of spontaneous combustion in bunker and cargo coal; the desulphurization of coke by air; mine timber in Illinois coal mines; treatment of natural gas gasoline to meet the doctor test; explosives (covering their materials, constitution and analysis); monel metal as a material for flame safety lamp gauzes; economic study of the New Albany shale; physiological effect of high temperatures and humidities with and without air movement; utilization of waste rock at lime plants.

Geological Survey

Deposits of manganese ore in the Batesville district, Arkansas; mine production gold, silver, copper, lead and zinc in Colorado in 1922; sulphur and pyrites in 1922; feldspar in 1922; fluorspar in 1922; continuity of some oil-bearing sands of Colorado and Wyoming; the Los Burros district, Monterey County, Cal.; diamonds from Arkansas; oil shale deposits in the Rocky Mountain region.

Bureau of Standards

Thermal stresses in steel car wheels; lathe breakdown tests of high speed tool steels; cooling properties of liquids used in heat treatment of steel; new standard steel samples; tests of steel wire rope on sheaves; scratch hardness of copper; strength of zinc roofing.

Department of Commerce**Coal**

United States coal production; overseas coal export situation; Austrian fuel supply; anthracite coal industry of Wales; coal production and consumption in Yugoslavia; British industrial revival hampered by lack of coal; conditions in the British coal-mining industry; development of coal industry in Lorraine; coke situation in eastern France; subsidies for production and transportation of Spanish coal; record coal output in United Kingdom; American gas coal has slight advantage in Italian market; Hungarian coal production in 1922; situation of the Austrian coal market; Ruhr coke receipts slightly improved; partial cessation of activity in coal industry in Chile; notes on foreign coal trade.

Minerals and Metals

United States steel exports gain in

February; United States record production of iron ore; United States copper production; foreign markets for U. S. iron and steel in February; United States imports of iron and steel in January; United States steel exports increase in March; British steel output gains in March; March shows gain in British steel exports; conditions in British iron and steel market; conditions in British iron and steel industry; commercial production of radium in Cornwall (England); minerals in the British Cameroons; mineral output of France in 1922; French iron ore output in 1922; French iron and steel situation; French iron and steel production; Havre copper market; stabilized coke prices give impetus to French metallurgy; coke situation in eastern France; Belgian metallurgical industry depressed; German foreign trade in iron and steel for 1922; German iron and steel trade dull; Austrian iron furnaces again in blast; Austrian iron and steel situation; Czechoslovakian iron output improves; situation in metallurgical industry of southern Soviet Russia;

INDUSTRIAL NOTES

The Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has issued a new bulletin entitled "Jones-Belmont Flotation Machine." The machine is described as "an improved cell that retains all the good features and eliminates all the bad ones inherent to flotation machines generally."

The Worthington Pump and Machinery Corporation, New York, has developed a new type of deep-well pump, operating on a principle not hitherto used in equipment of this kind. Although the pump is of the rotary class, the water is not elevated by means of a conventional type of impeller, but a form of propeller is used, being very similar to that employed for propelling ships.

Henry Woodland, secretary and treasurer of the Allis-Chalmers Manufacturing Company, died suddenly at his home in Milwaukee on Monday, May 14.

At the time of his death he was also vice-president and a director of the Hanna Engineering Company of Chicago.

NEW TAX DECISION HITS MINING

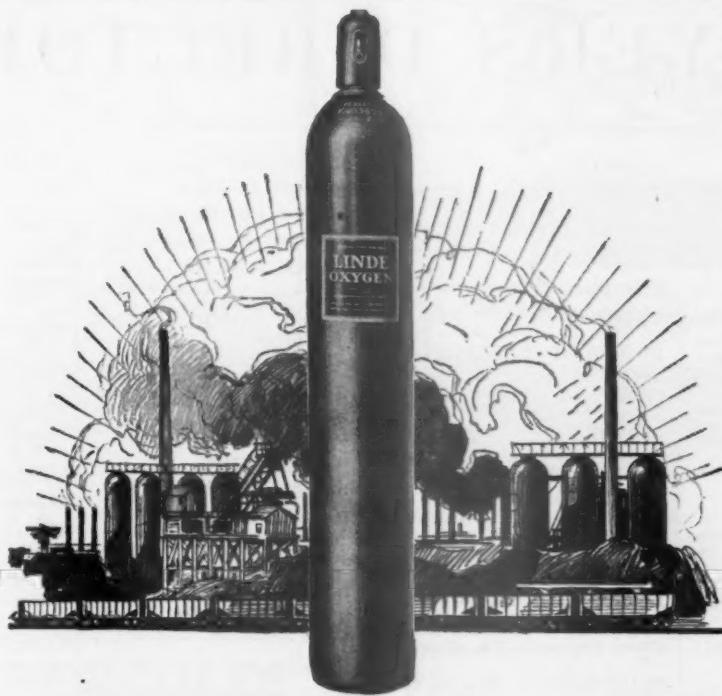
THE SUPREME COURT'S action in upholding the legality of the Minnesota occupation tax on the mining of ore opens the way for adoption of similar taxes by other states where mining operations constitute a major portion of the entire industrial activities. The occupation tax is supplemental to the general property taxes, and will more likely be adopted in states where property taxes are levied on an ad valorem basis.

It imposes on those engaged in mining or producing iron ore or other ores in the state an occupation tax equal to 6 per cent of the value of the ore mined or produced during the preceding year, in addition to all other taxes. The tax is to be computed on the value of the ore at the place where it is brought to the surface, less deductions. It requires those engaged in such business to make on or before February 1 of each year a report respecting their mining operations during the preceding year.

"The tax is an occupation tax," the Supreme Court decision says. "It is not laid on the land containing the ore nor on the ore after removal, but on the business of mining the ore which consists in severing it from its natural bed and bringing it to the surface where it can become an article of commerce and be used in the industrial arts.

"Mining is not interstate commerce, but, like manufacturing, is a local business, subject to local regulation and taxation. Its character in this regard is intrinsic, is not affected by the intended use or disposal of the product, is not controlled by contractual engagements and persists even when the business is conducted in close relation to interstate commerce. The business on which the tax is laid ends before the ore enters interstate commerce, and there is no discrimination against such commerce. It may well be that the tax indirectly and incidentally affects that commerce, just as any taxation of railroad and telegraph lines does, but this is not a forbidden burden or interference."

"The state may exercise a wide discretion in selecting the subjects of taxation, particularly as respects occupation taxes. It may select those who are engaged in one class of business and exclude others, if all similarly situated are brought within the class and all members of the class are dealt with according to uniform rules. Here the selection is of all who are engaged in mining or producing ores on their own account as owners or lessees. The selection seems to be an admissible one."



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A copy of "How Welded Joints Solved Pipe Line Troubles," may be secured upon request from our nearest District Sales Office.

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Irvington Smelting & Refining Works, Irvington, N. J.

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AERIAL TRAMWAY CABLE
Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

AIR COMPRESSORS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., 11 Broadway, N. Y.

ALTITUDE VALVE
Golden-Anderson Valve Specialty Co., Fulton Bldg., Pittsburgh, Pa.

AMALGAMATORS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

APPLIANCES, ENGINEERING
Lunkenheimer Co., Cincinnati, Ohio.

ARMATURES
General Electric Co., Schenectady, N. Y.

ASSAYERS
Pennsylvania Smelting Co., Pittsburgh, Pa.

AUTOMATIC CAR CAGERS
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

AUTOMATIC COAL SKIP
Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

AUTOMATIC (Mine Doors, Truck and Electric Switches)
American Mine Door Co., Canton, Ohio.

BAROMETERS
Taylor Instrument Companies, Rochester, N. Y.

BATTERY-CHARGING EQUIPMENT
General Electric Co., Schenectady, N. Y.

BELTING (Conveyor, Elevator, Transmission)
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BELTING, SILENT CHAIN
Morse Chain Co., Ithaca, N. Y.

BINS (Coke and Coal)
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

BIT SHARPENERS
Denver Rock Drill Mfg. Co., Denver, Colo.
Ingersoll-Rand Co., 11 Broadway, New York City.

BLASTING POWDER
Hercules Powder Co., 934 King St., Wilmington, Del.

BLASTING SUPPLIES
du Pont Powder Co., The E. I., Wilmington, Del.
Hercules Powder Co., 934 King St., Wilmington, Del.

BLOWERS
General Electric Co., Schenectady, N. Y.

BLOWERS' CENTRIFUGAL
Ingersoll-Rand Co., 11 Broadway, New York City.

BOILER MOUNTINGS
Lunkenheimer Co., Cincinnati, Ohio.

BOILER STOP AND CHECK VALVE
Golden-Anderson Valve Specialty Co., Fulton Bldg., Pittsburgh, Pa.

BOILERS
Allis-Chalmers Mfg. Co., Milwaukee, Wis. (feed pump).

BOXES, JOURNAL
J. R. Fleming & Son Co., Inc., Scranton, Penna.

BREAKERS (Construction and Machinery)
Jeffrey Mfg. Co., Columbus, Ohio.
Vulcan Iron Works, Wilkes-Barre, Pa.
Wilmot Engineering Co., Hazleton, Pa.

BRIQUETTING MACHINERY
Jeffrey Mfg. Co., Columbus, Ohio.
Traylor Eng. & Mfg. Co., Allentown, Penna.

BUCKETS (Elevator)
Jeffrey Mfg. Co., Columbus, Ohio.

CABLES (Connectors and Guides)
American Mine Door Co., Canton, Ohio.

CABLEWAYS

Jeffrey Mfg. Co., Columbus, Ohio.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.

CAGE (Safety Appliances)
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

CAGES

Car-Dumper & Equipment Co., Chicago, Ill.
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.
Holmes & Bros., Robert, Inc., Danville, Ill.
Lidgerwood Mfg. Co., 96 Liberty St., New York City.

CAR CONTROL AND CAGE EQUIPMENT

Car-Dumper & Equipment Co., Chicago, Ill.

CAR DUMPS
Car-Dumper & Equipment Co., Chicago, Ill.

CAR AND CAR WHEELS
Hockensmith Mine Car Co., Penn Station, Pa.

CAR-HAULS
Car-Dumper & Equipment Co., Chicago, Ill.

CASTINGS
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

CHAINS
Jeffrey Mfg. Co., Columbus, Ohio.
Morse Chain Co., Ithaca, N. Y.

CHAINS, AUTOMOBILE ENGINE
Morse Chain Co., Ithaca, N. Y.

CHAINS, DRIVE
Morse Chain Co., Ithaca, N. Y.

CHAINS, FRONT END
Morse Chain Co., Ithaca, N. Y.

CHAINS, OILING
Morse Chain Co., Ithaca, N. Y.

CHAINS, POWER TRANSMISSION
Morse Chain Co., Ithaca, N. Y.

CHAINS, SILENT (Rocker-Joint)
Morse Chain Co., Ithaca, N. Y.

CHAINS, SLING
Morse Chain Co., Ithaca, N. Y.

CHAINS, SPROCKET WHEEL
Morse Chain Co., Ithaca, N. Y.

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Reessler & Hasslacher Chemical Co., 709-717 Sixth Avenue, New York.

CHEMISTS
Hunt, Robt., & Co., Insurance Exchange, Chicago, Ill.

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Ohio Brass Co., Mansfield, Ohio.

CLUTCHES
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COAL COMPANIES
Clinchfield Coal Corp., Dante, Va.
Lehigh Coal & Navigation Co., Philadelphia, Pa.
Stonega Coal & Coke Co., Philadelphia, Pa.

Thorne, Neale & Co., Philadelphia, Pa.
Wholesale Coal Co., Pittsburgh, Pa.

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Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

Jeffrey Mfg. Co., Columbus, Ohio.

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Goodman Mfg. Co., Chicago, Ill.
Ingersoll-Rand Co., 11 Broadway, N. Y.

Jeffrey Mfg. Co., Columbus, Ohio.

COAL DRYING PLANTS

Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

COAL HANDLING MACHINERY

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Lidgerwood Mfg. Co., 96 Liberty St., New York City.

Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

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Goodman Mfg. Co., Chicago, Ill.

Ingersoll-Rand Co., 11 Broadway, New York City.

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Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

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Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

COAL WASHING PLANTS

Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

COCKS (Locomotive, Cylinder and Gauge)
The Lunkenheimer Co., Cincinnati, Ohio.

COILS (Choke)
General Electric Co., Schenectady, N. Y.

COMPRESSORS, AIR
General Electric Co., Schenectady, N. Y.

Ingersoll-Rand Co., 11 Broadway, New York City.

COMPRESSORS, MINE CAR
Ingersoll-Rand Co., 11 Broadway, New York City.

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CONCRETE REINFORCEMENT
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Ingersoll-Rand Co., 11 Broadway, New York City.

CONSULTING ENGINEERS
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CONTRACTORS
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Goodman Manufacturing Co., Halsted St. and 48th Place, Chicago Ill.

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Traylor Eng. & Mfg. Co., Allentown, Penna.

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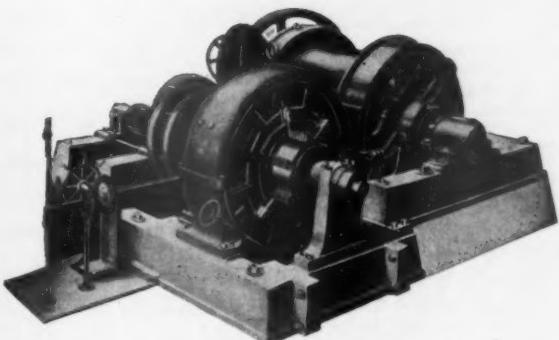
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cago, Ill.

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Goodman Mfg. Co., Forty-eighth
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ELEVATORS, BUCKET

Jeffrey Mfg. Co., 958 N. Fourth St.,
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kee, Wis.

Ingersoll-Rand, 11 Broadway, New
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kee, Wis.

Ingersoll-Rand Co., 11 Broadway,
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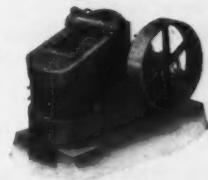
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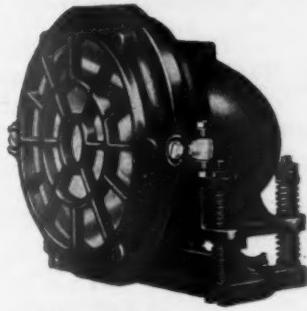
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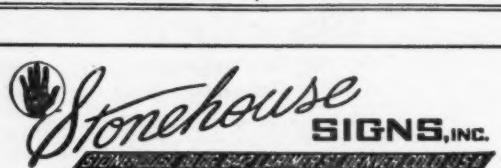
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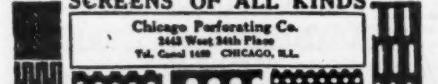
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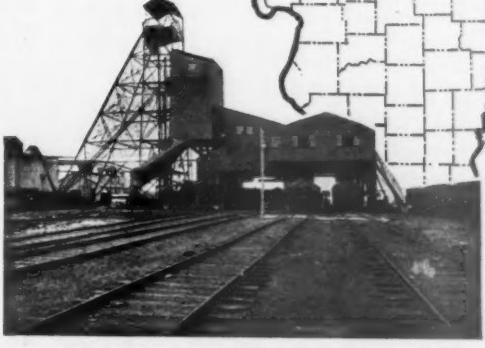
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The 26th Annual Convention

The American Mining Congress
National Exposition of Mining Equipment

Milwaukee, Wisconsin

September, 24-29, 1923

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—OF—

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September 24-29, 1923

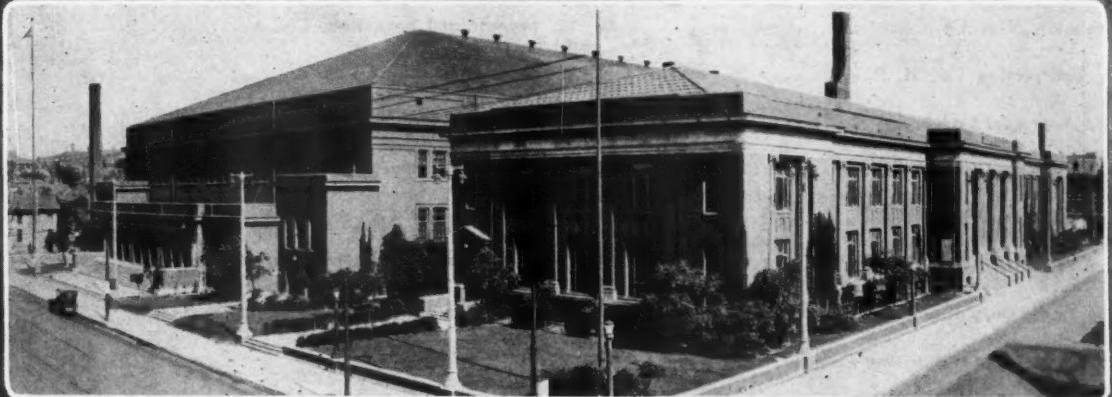
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THE Twenty-Sixth Annual Convention of The American Mining Congress and National Exposition of Mines and Mining Equipment, Milwaukee Auditorium, Milwaukee, Wis., September 24-29, 1923.



THE 1923 PROGRAM

EACH YEAR for twenty-five years the American Mining Congress has gathered together the leaders in the mining industry, discussed the needs of that industry, adopted a general platform in its behalf, and, to a large extent, carried it out. Each year has seen a betterment in mining conditions, and a growth in value of mineral products from \$650,000,000 in 1897 to \$4,056,000,000 in 1921.

The 26th Annual Convention, to be held in Milwaukee, September 24th to 29th, will lay before the mining men of the United States the most constructive platform ever presented for the entire mining industry.

The keynote of the 26th Annual Convention will be "Industrial Cooperation." The problem of securing a solution of the relationship of labor and capital is one of the most vital issues confronting the mining industry of the nation.

A modification of the Sherman law to allow cooperative combinations in the production and distribution of mining products is another subject which should receive consideration.

The problems of the coal industry cannot be solved by legislation nor by governmental interference. Only by the intelligent unhampered cooperation of those who understand coal will any solution of coal problems be possible. Such men will recognize the right of the miner to a fair wage, the right of the public to cheap fuel, and an intelligent public will concede their right to a fair profit.

The American Mining Congress has already gone on record in favor of a reduction in freight rates upon basic commodities which must first move before the many products fabricated therefrom can add to the income of railroads and meet the demands of commerce and industry.

The work of the Standardization Division of the American Mining Congress will bring together the operator, engineer, mine superintendent, and manufacturer in practical discussion of the every day problems and efficient production.

The 26th Annual Convention of the American Mining Congress at Milwaukee will furnish opportunity for the development of practical, definite, crystallized plans of action for the industry as a whole to the end that it may furnish a supply of these basic products necessary to the continued industrial prosperity of the nation.

THE AMERICAN MINING CONGRESS.

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The OPEN FORUM:

Practical discussions on machinery and materials used in mining will be a new and important feature of the twenty-sixth annual convention of the American Mining Congress in Milwaukee, September 24-29. All of the manufacturers who exhibit their products will be invited to send their most experienced engineers to participate in these discussions. During and after the meetings the equipment on exhibition will be visited and inspected. Nearly all the more important articles used in mining will be available for study and demonstration. To obtain in any other way the information you can secure at this exposition, would take much more of your time and money than will a trip to Milwaukee next September.

All mining men are invited to submit questions on mine equipment for discussion at these meetings. From the subjects sent in from the field, a program will be prepared and distributed in advance of the convention. The proceedings of these meetings, which will be published, will contain much valuable information, both for manufacturers and operators.

*Send in questions at once for discussion.
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